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STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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PRODUCTION · PROCESSING · DISTRIBUTION · USE

MOLY MAKES THE JOB GO

THE producer of large, involved steel castings is ordinarily up against the difficulty of obtaining uniformly good physical properties with simple heat treatment. There are Moly steel analyses which will solve this problem.

For example: A very simple heat treatment gives cast Chrome-Moly (S.A.E. 4140) oil rig casing hooks the tensile and fatigue strength necessary for continuous, hard service under loads which usually run into many tons. The heat treatment consists merely of normalizing and air cooling.

This is but one of hundreds of cases in which Moly cast steels have licked tough problems to the mutual advantage of producer and user. Full information concerning Moly cast steels is contained in our book, ***"Molybdenum in Steel."*** It is free to engineers and production executives. Climax Molybdenum Company, 500 Fifth Ave., New York City.

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MOLY

As the Editor Views the News

■ RECENT rapid upturn in steel demand has been halted. Output last week (p. 21) was at 40 per cent of ingot capacity, unchanged from the previous week. Production of finished automobiles again fell off last week but Detroit is optimistic (p. 23) because of the vigorous start on 1939 models. . . . Testifying before the senate civil liberties committee last week (p. 17) T. M. Girdler, chairman Republic Steel Corp., made a strong point in insisting that the committee investigate the CIO as thoroughly as it had Republic. Prejudice on the part of the committee was plainly apparent. Affidavits which Republic submitted against CIO were not read in public, but held for private reading by the committee, and lost sight of during the confusion of the closing session.

• • •

See New NRA Threat

Word from Washington is not of a character that will provide a strong stimulus to further revival of business confidence. While the national economic committee is making a slow approach on its monopoly investigation, indications as seen at Washington (p. 26) are that it will serve as an instrument for completing a revised NRA, already well under way as a result of the Wagner act, the Walsh-Healey act, the wage-hour law and other legislation. It is strongly indicated that the committee will reach conclusions that widespread reforms are necessary in our business and industrial fabric. Amendments to the Walsh-Healey act to be considered by the next congress will provide that government contractors must observe all decisions of the national labor relations board.

• • •

Good Basis In Exports

Following a two-year survey, the United States tariff commission last week (p. 19) issued a 527-page report on iron and steel in world trade. It finds the United States is on a strong export basis for steel products in general, particularly tin plate, sheets and plates and is assailable only in a few high-grade items such as tool and special steels. . . . Fiftieth anniversary of W. P. Snyder & Co. (p. 31) recalls many of the developments by which today's vast iron and steel industry came into being. . . . Sales of iron and steel out of warehouse stocks (p. 19) are well in advance of current steel output, with a good outlook over the rest of the year. . . . The largest group of British iron and steel and metalworking representatives ever to visit this country will arrive in New York (p. 15) in October.

• • •

Steel Plant Safe Haven

Twenty-five years ago the steel industry stood close to the bottom on the list of the more hazardous industries. Today it is near the top among the safest. With safety devices and methods well understood, the record continues to be bettered (p. 36) through various methods of enlisting the co-operation of all workers. . . . Due to improved heat treating methods beryllium copper (p. 42) now is being used as material for spring manufacture. . . . Light closely approaching natural sunlight is generated (p. 44) by a new lamp containing liquid tellurium. . . . Fiber-tired disk wheels are a novelty incorporated (p. 44) in a chain-driven, live-roller table recently installed in a steel mill. . . . Improved apparatus now is available (p. 50) for examining elastic behavior of soft metals.

• • •

Wrinkles In Shop Work

A new tubing material (p. 50) is inert to gasoline, oil and organic solvents; it is light, tough and highly flexible. . . . Torch cutting and welding are the methods employed by a large crane builder (p. 52) in forming heavy-duty gears; savings are effected by using low carbon, thick-walled, steel tubing for the hubs. . . . Increased demand is noted for galvanized sheets with coatings sufficiently elastic to permit heavy forming and drawing operations. Such coatings may be obtained (p. 56) with correctly designed equipment and proper practice. . . . Cast-to-shape dies of a new alloy are good after making 750,000 stampings and are produced (p. 62) at low cost. . . . One manufacturer sprays white lacquer on cast steel surfaces (p. 73) to reveal minute cracks.

E. L. Shaner

HOW DO YOU BUY STEEL?

Purchasing management formerly placed orders for steel on a price and shipment basis on the assumption of standard quality. However, with automatic processes and higher speeds, greater strains, etc., much closer uniformity is not only desirable, but often absolutely essential in securing faster factory schedules and lower production costs.

Anticipating this situation, Ryerson turned all old stocks, tightened specifications, and made inspections more rigid.

Only whole heats of alloy steel in narrow range analyses are selected for stock. Bars from every heat are analyzed and actually heat treated. Data sheets showing exact analysis and heat treatment results are sent with every order as a guide to securing the best heat treatment results. In addition, Ryerson certifies to the uniform high quality of every steel product.

Never before has any such quality control been attempted by a steel service organization. But the results are well worth the effort. Manufacturers are reporting savings in time, reduction in spoilage and lower costs. The safety factor is also an important consideration.

Since this higher uniform quality can be purchased without increase in price, we believe it will pay you to concentrate with Ryerson. Remember the steel is in stock and shipment is immediate.

If you do not already have a copy, we will be pleased to send you our illustrated book completely describing the Ryerson Certified Steel Plan.

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Hundreds in British Steel Group To Visit Scores of American Plants

■ ONE of the largest industrial groups ever to come to the United States from Great Britain will visit iron and steel and metalworking plants in this country to conduct their autumn meetings jointly with the American Iron and Steel institute and American Institute of Mining and Metallurgical Engineers, early in October.

The delegation will include several hundred members of the British Iron and Steel institute, and Institute of Metals. They are coming at the invitation of the two American organizations with whom they will meet, and they also will be the guests of scores of leading manufacturing companies. In each of the principal cities they will visit, local committees have been formed to facilitate plant inspections, and to provide entertainment.

Many Plant Visitations

From London last week came evidence of the elaborate preparations the members are making to see America, mainly industrial America. The plans, program and itinerary occupy 33 pages of a printed pamphlet, 8 x 12 inches. A large portion is devoted to the dates and names of the plants to be visited, in the United States and Canada.

The delegation will arrive in the United States in two principal groups, to convene in New York, Oct. 3-4 for the two-day meeting. A number of technical papers will be presented comparing American and British metals practice.

Section I will make a preliminary visit to Canada and arrive in New York, Oct. 1, one group stopping Sept. 30 at Buffalo and Niagara Falls, N. Y. In Buffalo, plants of Bethlehem Steel Co., Republic Steel Corp. and Bliss & Laughlin Inc., will be inspected; and in Niagara Falls, Union Carbide Research Laboratories, Carborundum Co., and Titanium Alloy Mfg. Co.

Section II will arrive in New York, Oct. 2 and Oct. 3. The two British institutes will join with the two American institutes in the meeting program, as shown on the following page.

Upon conclusion of the technical meetings, some of the delegates will visit plants in the New York area, including Bell Telephone Laboratories Inc., International Nickel Co. Research Laboratories, and United States Steel Corp. Research Laboratories, and then sail for Great Britain.

Visitors choosing to remain in the United States will constitute Sections III and IV, Section III going to Washington, Pittsburgh Cleveland and Detroit, and Section IV returning to New York or Boston with optional visits to Chicago and Buffalo.

Section III will divide into two groups, one of predominantly ferrous interest and the other nonferrous. The former on Oct. 5 will visit the Thomas A. Edison plant, West Orange, N. J., Bell Telephone Laboratories, New York, International Nickel Co. Research Laboratories, Bayonne, N. J., United States

Completing Difficult Steel Construction Job

■ **With no previous similar designs as a guide, building this 9,000,000-pound World's Fair perisphere was one of the most difficult design jobs ever encountered by engineers of American Bridge Co., Pittsburgh. According to them, it is "the first spherical structure of its kind ever known in history." Drum girder and meridian trusses were assembled at Ambridge, Pa., fabricating plant to assure a perfect fit of every piece**

Steel Corp. Research Laboratories, Kearny, N. J., and arrive in Washington, Oct. 6.

The nonferrous group will have a choice of visiting on Oct. 5 the American Smelting & Refining Co., Baker, N. J., Anaconda Copper Co., Perth Amboy, N. J., American Metal Co., Carteret, N. J., or New Jersey Zinc Co., Palmerton, Pa. The next two days, Oct. 6-7 they will go to the Naugatuck valley to visit American Brass Co., Ansonia, Conn., Bridgeport Brass Co., Bridgeport, Conn.; Scovill Mfg. Co., Chase Brass & Copper Co., Seymour Mfg. Co., all in Waterbury, Conn.; and International Silver Co., Meriden, Conn.; thence to Washington, Oct. 8.

From Washington, the ferrous group will visit Bethlehem Steel Co., Sparrows Point, Md., Rustless Iron & Steel Corp., Baltimore; Annapolis, and various government bureaus in Washington. They will then go direct to Pittsburgh, arriving Oct. 10, while the nonferrous group will go to International Nickel Co., Huntington, W. Va., back to Washington and then to Pittsburgh, arriving Oct. 11.

In the Pittsburgh district, the visitors will inspect many plants including the Clairton, Rankin, Homestead, Braddock and Duquesne works of Carnegie-Illinois Steel Corp.; Pittsburgh works of Jones & Laughlin Steel Corp.; Pittsburgh Rolls Corp., Mesta Machine Co., McIntosh-Hemphill Co., Heppenstall Co., United Engineering & Foundry Co., Mellon institute, in Pittsburgh; Firth-Sterling Steel Co., McKeesport, Pa.; Allegheny Steel Co., Brackenridge, Pa.; National Tube Co., McKeesport, Pa.; Westinghouse Electric & Mfg. Co., East Pittsburgh; American Steel & Wire Co., Donora, Pa.; Aluminum Co. of America, New Kensington, Pa.; A. M. Byers Co., Ambridge, Pa.; Edgewater Steel Co., Oakmont, Pa.; Harbison-Walker Refractories Co., Hays Station, Pa.; Jessop Steel Co., Washington, Pa.; Pittsburgh Steel Co., Allenport, Pa.; Spang-Chalfant Inc., Etna, Pa.; and Universal-Cyclops Steel Corp., Bridgeville, Pa.

A banquet will be served for both groups in William Penn hotel, evening of Oct. 11. United States Steel Corp. will present its technicolor film, "Steel—Man's Servant."

From Pittsburgh, the party will go to Cleveland on Oct. 13. One group will go direct, the other via Youngstown to visit Youngstown Sheet & Tube Co., Republic Steel Corp., Cold Metal Process Co., Carnegie-Illinois Steel Corp. and Truscon Steel Co.

Inspections in Cleveland, Oct. 13-15, will include Republic Steel Corp., American Steel & Wire Co., Chase Brass & Copper Co., Cleveland Graphite Bronze Co., Eaton Mfg. Co., Lincoln Electric Co., Lamson & Sessions Co., General Electric Co., Warner & Swasey Co., Winton Engine Co., Timken Roller Bearing Co., Canton, O.; and Republic Steel Corp., Canton and Massillon.

A banquet will be served at the Union club, Cleveland, evening of Oct. 14.

The party will travel by boat to Detroit on Oct. 16. There they will spend two days attending the National Metal congress and exposition and visiting manufacturing plants. On the evening of Oct. 17 the autumn lecture of the Institute of Metals, "Gases and Metals," will be presented at the Book-Cadillac hotel by Dr. C. J. Smithells.

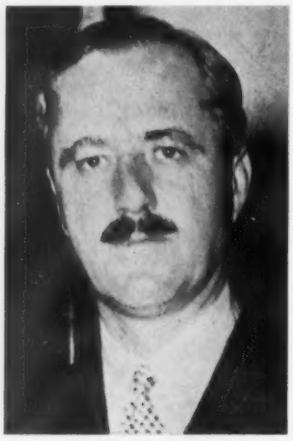
Plants to be visited in the Detroit area include: Ford Motor Co., Great Lakes Steel Corp., Hoskins Mfg. Co., Revere Copper & Brass Co., Briggs Mfg. Co., General Motors Research Laboratories, L. A. Young Spring & Wire Co., Ternstedt Mfg. Co., Wolverine Tube Co., Automatic Products Co., Bopp Steel Corp., Detroit Seamless Steel Tubes Co., Detroit Steel Corp., Fisher Body Co., McLouth Steel Corp., Stan-Steel division of Great Lakes Steel Corp., Rotary Electric Steel Co. and United States Rubber Co.

On the evening of Oct. 18, the party will attend the banquet of the Institute of Metals division, American Institute of Mining and Metallurgical Engineers at Book-Cadillac hotel, in connection with the National Metal congress.

Those not wishing to go farther west will leave for New York and Boston, stopping in Buffalo to visit on Oct. 19 several plants already mentioned. Some will stop in Boston prior to sailing and will visit Massachusetts Institute of Technology and Harvard university.

A considerable number, however, will remain in Detroit through Oct. 19 to spend more time at the National Metal show and to visit the Chrysler Corp.'s Plymouth plant. This party will go from Detroit to

(*Please turn to Page 95*)



William Humble Eric Ward, Earl of Dudley

President, Iron and Steel Institute (British), and chairman, Round Oak Steel Works Ltd.

American and British Institutes' Program

Monday, Oct. 3

Engineering Societies Building

AFTERNOON

"Recent Developments in the American Iron and Steel Industry," by C. E. Williams, Battelle Memorial institute.

"Development of Continuous Strip Mills," by D. Eppelsheimer Jr., American Rolling Mill Co.

"Research and Development in American Nonferrous Metal Industry," by Prof. C. H. Mathewson, Yale university.

EVENING

Waldorf-Astoria

Banquet.

Tuesday, Oct. 4

Waldorf-Astoria

MORNING

Iron and Steel Institute; American Iron and Steel Institute; and Iron and Steel division, American Institute of Mining and Metallurgical Engineers

"American Electric Furnace Practice," by W. M. Farnsworth and E. R. Johnson, Republic Steel Corp.

"Electric Furnaces in European Steel Works," by D. F. Campbell.

"Grain Size and Hardenability in Steels To Be Heat Treated," by E. C. Bain, United States Steel Corp.

"Modern Rolling Mill Practice in America," by Quincy Bent, Bethlehem Steel Co.

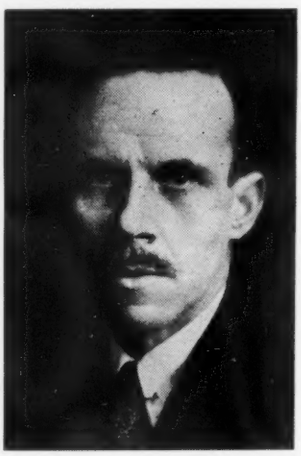
Institute of Metals; and Institute of Metals Division, American Institute of Mining and Metallurgical Engineers

"Some Characteristics of Copper-Aluminum Alloys Made from Aluminum of Very High Purity," by Marie L. V. Gayler.

"Oxidation Resistance in Copper Alloys," by L. E. Price and G. J. Thomas.

"Tarnishing of Silver and Silver Alloys and Its Prevention," by L. E. Price and G. J. Thomas.

"An X-Ray Study of Dental Amalgams," by A. R. Troiano.



Dr. Cecil Henry Desch

President, Institute of Metals (British), and superintendent, metallurgical department, National Physical Laboratory, Teddington

"Soft-Pedal" Republic's Affidavits Against CIO

■ INSISTENCE that the same searching inquiry be made into CIO activities as was applied to Republic Steel Corp. was voiced to the senate civil liberties committee last week by T. M. Girdler, Republic chairman.

Mr. Girdler, the last witness in the committee's four-week investigation of his company's labor practices, told the committee he had heard "an undercurrent of rumor for months that because our company has signed no contract with the CIO the real purpose of the present session was to smear Republic Steel Corp., crucify Tom Girdler and whitewash the CIO."

Obvious throughout the hearings was the committee's hostility toward the company, and Mr. Girdler charged the hearings served "to paint a wholly one-sided picture of the controversy between Republic and the CIO and have resulted in conveying an utterly distorted impression of the relations between Republic and its thousands of employes."

Evening sessions were held during the closing days of the investigation. In the resultant confusion some of the evidence and documents introduced by the company received scant attention. Mr. Girdler was denied permission to read a prepared statement until after he had been cross examined by Robert M. La Follette Jr., committee chairman.

T. F. Patton, Republic general counsel, futilely sought to have La Follette summon witnesses who, Mr. Patton contended, would tell a story differing widely from that of the union witnesses called by the committee. He was granted permission finally to introduce their affidavits.

Tells of CIO Terrorism

Typical of these was one by Martin J. Beckner, Canton, O., former president of the Stark County Industrial Union Council and a member of the SWOC strike committee.

Beckner testified CIO organizers provided money for dynamite and bombs used in the strike at Canton, O.; that a flying squad of communists was sent into the district to do the bombing and other terroristic acts; that a CIO organizer had ordered an employe representative and a crippled worker at Canton "beaten up"; that the accidental wounding of member of the "flying squad" by one of his own companions was blamed on Republic; that CIO leaders stuffed ballot boxes in a back-to-work vote with 3000 fake ballots printed in another city.

In his own statement filed with the committee, Mr. Girdler said:

"There has been some inkling in these hearings of the measures and methods of the CIO, of the violence which it launched and of the threats its members made to workmen, their wives and children, but no full and searching inquiry has been made into these matters.

550 Cases of Violence

"We are submitting to this committee the records of 550 cases of violence and intimidation by the CIO. We are prepared to produce hundreds of witnesses to support these charges. In view of the facts I respectfully insist that the committee investigate these violations of the civil rights and liberties of American citizens by the CIO.

"Your committee has subpoened our records to obtain the facts with respect to expenditures made by Republic in connection with industrial disputes.

"We request that the same degree of close examination be publicly applied to similar records of the CIO in order that the public may know what use was made of the $1,500,000 which, according to testimony before this committee, was made available to the Steel Workers' Organizing committee in its organizational campaigns in the steel industry.

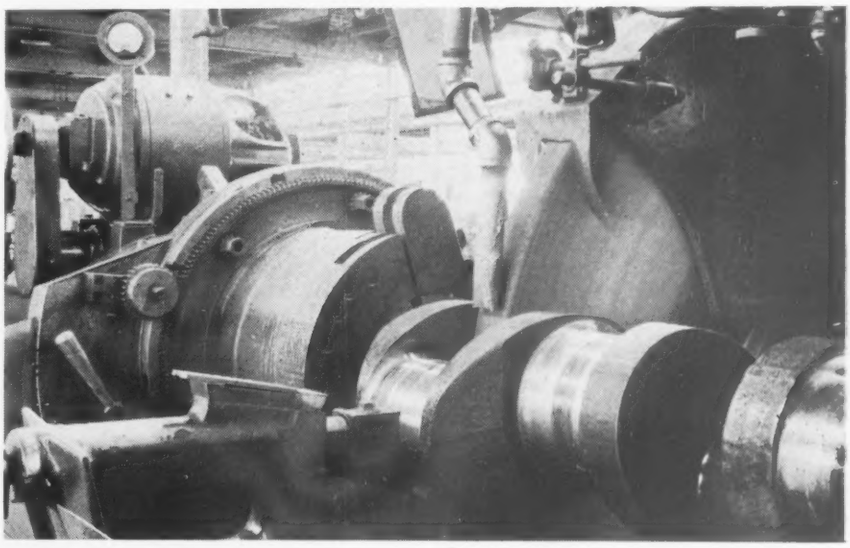
"In requesting an investigation of the CIO let me make it clear that I do not condone nor will I attempt to justify any reprehensible act that may be truthfully laid to anyone connected with Republic.

"During labor disputes we have often had to contend with ruthless violence and lawless forces apparently planned by union organizers. In many communities, a virtual reign of terror existed. It is not surprising therefore that in those periods of severe stress and strain, judgments were sometimes warped and some mistakes were made by Republic employes. . . .

"My orders are that during any period of labor trouble or excitement company guards are not to leave company property and are strictly to avoid violence of every kind.

"Your committee has laid great stress upon the alleged activities of our police department along the line of labor espionage. Let me state flatly and emphatically that any activities of our company guards beyond the safeguarding of our properties against vandalism and sabotage and the protection of our em-

5-Foot Wheel Grinds 2-Ton Diesel Crankshaft



■ **This closeup shows part of a 2-ton diesel engine crankshaft being finish ground at the Ohio Crankshaft Co.'s new Harvard avenue plant, Cleveland. Grinding wheel is approximately 5 feet in diameter. Note meter mounted on motor, heavy backup tools steadying shaft opposite grinding wheel, swinging calipers above work, mirror for viewing backside operations**

ployes from violence, were without my knowledge. There is no justification for espionage which is aimed against unionization of employes or which would in any way interfere with their collective bargaining rights. Explicit orders against the practice in Republic are now in effect.

"The committee has devoted much attention to the strike of 1937. That strike was called by the CIO solely because of its insistence that we sign a contract.

"There was no question involved of wages, of hours, of working conditions, or even of collective bargaining. But actual questions of civil rights were involved—the right of men to work when and for whom they chose and the right of Republic to decide for itself whether it should or should not sign a contract.

"Our position was justified, by the fact that when the strike was called, some 23,000 out of a total of 45,000 workers in the mills remained on the job, while other thousands tried to work and were prevented by pickets, most of whom were not employes."

Cites Communistic Influences

Republic officials, Mr. Girdler said, were convinced signing a contract with the CIO would be but the first step toward a closed shop and the check-off. This belief, he pointed out, was confirmed by statements by CIO officials.

Communistic influences and irresponsible leadership of the CIO, he declared, made doubtful that any agreement signed by the company would be kept by the union.

"Because we took that stand and were able to maintain it, the name of Republic and the name of Tom Girdler have been held up before the country and before this committee as the embodiment of all that is wrong in the treatment of employes. That is the penalty, apparently, that must be paid by anyone who dares thwart the purposes and methods of the CIO. Our crime is not the ill treatment of our employes—it consists simply of our refusal to sign a contract with the CIO.

"The most vicious and untruthful charge against the company is that we do not accept the principle of collective bargaining. We not only accept it, but we practice it and have for years. Republic will deal with representatives chosen by any group of its employes.

"What this country needs today, if industry and its workers are to prosper, is a form of collective bargaining and a national policy for industrial relations which will bring industrial peace.

"It is now clear to every thinking person that the whole New Deal program, theoretically designed to produce peace in industry, has in fact plunged the country into a period of unprecedented industrial turmoil and conflict.

"The existence of these disturbed conditions is well known to this committee. You have raked over the dead ashes of past disputes in search of the minutest mistakes made by industry. In the process you must have discovered that something is terribly wrong with the present one-sided national policy affecting industrial relations.

Urges Sane Labor Law

"With all due respect for your committee, I think that the vital issue of today does not revolve around individual cases of violence or individual cases of labor espionage dug up by your investigators out of the past. The great present objective should be—what plan can be evolved which in the future will safeguard the collective bargaining rights of all employes and at the same time eliminate industrial conflict and violence.

"What we must do in this country somehow, first of all, is to get fair and sound labor legislation which will minimize the number of industrial disputes and prevent situations which lead to the breakdown of law—legislation framed in the interest of the country as a whole and not just in the interest of a special group. That is the situation we are in now with the Wagner act, which is one sided, and the national labor relations board, which is prejudiced against all employers and all labor organizations except the CIO.

"It seems to me the following principles are self-evident:

"No tribunal can be impartial if it acts as combined investigator, prosecutor, judge and jury. This tyrannical procedure, now standard practice for the labor board under the Wagner act, has no place in a democracy. The act should be amended to provide a tribunal properly in keeping with American practices.

"No law can be fair which grants one group a privilege which it denies to another group. The act should be amended so that the employer as well as the employe may bring complaint before the tribunal.

"The act as presently interpreted and administered by the labor board restricts the right of free speech. The board deprives the employer of the right to express his opinions to his own employes. The act should be amended so that there can be no question that it conforms to our bill of rights of the constitution and preserves the guarantee of free speceh which is one of our most important civil liberties.

"The act as now written protects the employe against coercion by the employer. This does not go far enough. In the interests of civil liberties and civilization the act should be amended also to protect the worker against coercion from any source, including labor union organizers and sympathizers and the ruthless tactics indulged in by them. The act should define unfair practices on the part of labor organizations as well as employers.

"There should be added to the act some provision which will impose upon unions responsibility for their actions. If collective bargaining is actually to be what the term implies, each side to the bargain must be a responsible party. Furthermore, this responsibility should extend to picketing, placing an obligation on unions not to conduct picketing destructive to any man's right to work.

"Amendment of the act along these lines, I am convinced, would usher in a period of sane labor relations and good-will throughout industry in this country."

Luther A. Day, attorney for Republic, charged before the labor relations board last week that the Wagner act is unconstitutional.

He appeared in opposition to a proposed board order directing reinstatement with back pay of approximately 5000 Republic strikers. The board previously ruled that Republic's labor practices caused the strike.

Mr. Day contended that the board was without jurisdiction to issue a complaint in the case because CIO members engaged in lawless and violent picketing. He said this precluded the CIO union from filing charges against Republic with the board.

The board took the case under advisement after hearing counsel for both sides.

Crucible Steel Co. Considers Expansion

■ Crucible Steel Co. of America, in its registration statement filed with the securities and exchange commission last week, stated that while no definite plans have been determined, it has under consideration the construction of additional facilities for producing tin plate and installing electric furnaces and other equipment by the Pittsburgh Crucible Steel Co. (subsidiary) at Midland, Pa., works; additions to and improvements in finishing facilities and auxiliary equipment at its Park works, Pittsburgh, and at other plants.

Of the $10,000,000 ten-year sinking fund 4½ per cent debentures, due Aug. 1, 1948, which it proposes to issue, $6,545,000 will be used for retiring outstanding bonds, and the remainder for working capital.

U. S. "Strong", Is Tariff Report

■ UNITED STATES tariff commission, Washington, late last week issued a 527-page survey on iron and steel covering the industries and international trade of the principal producing and trading countries, with particular reference to factors essential to consideration of the tariff.

In preparation nearly two years, this survey embodies comprehensive and up-to-date information respecting the iron and steel industries of the world. Its issuance at this time is opportune because of important changes in the industry and international trade.

In the last decade, the survey states, economic and political changes have affected international competitive position of the principal nations producing iron and steel. In many foreign countries, increased production has lagged behind rapidly expanding demand, resulting in a scramble for raw materials—iron ore, pig iron and scrap.

Influenced Trade Policies

This situation had marked influence on tariff and international trade policies of foreign countries. In general, the trend since 1929 has been in the direction of increasing import restrictions, although policies change to suit needs of the moment. In contrast, tariff policy of the United States during the last decade and longer with respect to iron and steel has remained fairly stable. Most recent major changes were lowering of certain duties in trade agreements with Belgium, Luxemburg and Sweden.

As indicated in the report, the United States is on a strong export basis for steel products taken as a whole. This is particularly true of such items as tin plate, sheets and plates. With respect to other items, such as certain special forms of tool and fine steel, sold in the market because of their high quality, it has usually been on an import basis.

Such imports as have occurred in tonnage-grade steel have been confined to sales and seaboard markets where their price has enabled them to compete to some degree; but even in the seaboard markets the domestic industry has certain marked competitive advantages, such as prompt delivery, high quality, and ability to supply a complete line of sizes and grades required by the consumer.

In leading European producing and exporting countries where cartels, syndicates, and other trade associations are strong, an increasing control is exercised over internal prices. Various governmental protective devices facilitate price control. Some of the trade restrictions, however, are designed primarily to raise revenue or to balance trade.

Attempts have been made by the International Steel cartel, with varying degrees of success, to secure co-operation of United States producers and exporters in maintaining price stability in foreign markets.

No Restrictions Here

Aside from duties, the report states, the United States has no restrictions on imports of iron and steel such as the quotas, exchange controls, and miscellaneous taxes which are frequently employed in foreign countries. All imports of semifinished and finished iron and steel products, except barbed wire, as well as pig iron and scrap, are dutiable. For the most part, rates range from 10 to 35 per cent in terms of ad valorem equivalents. Additional rates of duty apply to many iron and steel products containing more than specified amounts of alloys and to certain products advanced by processing, such as cold rolling and galvanizing.

Copies of the report may be obtained from the superintendent of documents, Washington, for 60 cents per copy.

Allegheny-Ludlum Merger Approved

■ At separate meetings Aug. 11 stockholders of Allegheny Steel Co. and the Ludlum Steel Co. voted approval of the merger of the two companies.

As of Dec. 31, 1937, the total assets of the two companies were approximately $31,815,000 and their working capital totaled about $10,032,000. (See STEEL, June 13, p. 19.)

A statement issued by W. F. Detwiler, chairman, and Hiland G. Batcheller, president, Allegheny-Ludlum Steel Corp., said:

"One of the greatest deterrents to larger consumption of the stainless steels has been the high price of those steels because the cost of manufacture has been spread over so small a total volume. The merger of Allegheny and Ludlum makes possible the development of greater volume in their special lines with little or no duplications either in facilities or products. It represents a constructive example of adjustment to changing conditions on the part of two organizations whose success has been largely based on the results of research and development work."

Warehouse Sales Relatively High

■ STEEL warehouse sales for the first six months of 1938 were 56.9 per cent of the volume in first half of 1937, according to Walter Doxsey, executive secretary, American Steel Warehouse association.

Steel ingot production for the same period was 37.7 per cent of first half 1937 volume.

"Relative stability of the steel distributing industry appears even more marked when it is remembered that the warehouses enjoyed abnormal increases in business during the first half of 1937," said Mr. Doxsey. "Early last year possibilities of higher prices and delayed shipments arising from disturbing labor situations brought a flood of orders to the steel warehouses which resulted in an increase of business of 60 per cent for the first six months of 1937, as compared with the volume done during the same period of 1936. On the same basis, ingot production last year increased only 27 per cent. Thus the comparison of warehouse business for the first six months of this year is made against the all-time peak of 1937.

Steel Warehouses Active

"If comparisons are predicated upon activity during the first six months of 1936, we find the rate of activity for steel warehouses throughout the first half of the present year was 91 per cent, against a rate of 48 per cent for the steel producing industry.

"The fact that the decrease in warehouse orders has not been so great as the decline in steel ingot output points to an increase in the percentage of total steel production reaching the ultimate consumer through distributing outlets. Last year this percentage was 13.28. Experience, over a number of years, has proved the percentage of steel flowing through warehouse stocks increases as the total production of steel decreases.

"Thus, the greatest percentage was attained in 1932 when steel production was at a minimum for the depression of the early thirties. In that year the percentage of the total steel produced distributed by steel warehouses was 16.12."

June sales by warehouses show gains over May in 11 of 15 markets, according to figures compiled by the warehouse association. Preliminary records for July indicate continued improvement which, the association believes, "will be maintained in the remainder of the year."

Finished Steel In First Half

■ FINISHED steel made for sale in the first half this year totaled 8,747.803 gross tons, according to the American Iron and Steel institute, of which 4,417,843 tons was produced in the second quarter and 4,329,960 tons in the first. Thus, second quarter gained 87,883 tons, or 2.03 per cent. Finishing capacity was engaged at 33.5 per cent for the six months, 33.3 per cent in the first quarter and 33.7 in the second.

No significant shifts between heavy and light forms was apparent. Output of structural shapes increased from 26.4 per cent of capacity in the first quarter to 27.3 per cent in second; steel piling from 31.9 to 43.4; bars from 21.3 to 22.8; black plate from 50.8 to 56.9; cold-rolled strip from 21.0 to 22.1; and drawn wire from 31.7 to 36.4.

On the other hand, plates dropped from 21.2 per cent in first quarter to 20.7 per cent in second; heavy rails from 23.5 to 19.1; light rails from 11.1 to 6.2; hot-rolled tin plate from 44.9 to 42.5; cold-rolled tin plate from 37.9 to 22.1; sheets from 30.4 to 29.9; hot-rolled strip from 21.0 to 20.2; car wheels from 15.0 to 13.2; and axles from 9.6 to 6.5.

Steel tonnage supplied for conversion into further finished products amounted to 682,869 gross tons for first half, divided 325,731 for first quarter, 3557,138 for second.

AMERICAN IRON AND STEEL INSTITUTE
Capacity and Production for Sale of Iron and Steel Products

Second Quarter - 1938 (period)

		Number of companies	Items	Annual Capacity Gross tons	Production for Sale—Gross Tons: Current Quarter: Total	Current Quarter: Per cent of capacity	Current Quarter: Shipments: Export	Current Quarter: Shipments: To members of the industry for conversion into further finished products	To Date (6 Months 1938): Total	To Date: Per Cent of capacity	To Date: Shipments: Export	To Date: Shipments: To members of the industry for conversion into further finished products
Steel Products	Ingots, blooms, billets, slabs, sheet bars, etc.	29	1	xxxxxxx	320,721	xxx	32,576	196,092	673,282	xxx	107,482	345,552
	Heavy structural shapes	8	2	4,657,100	318,237	27.3	22,157	-	626,082	26.9	40,142	xxxxxxx
	Steel piling	3	3	234,500	25,399	43.3	674	-	44,115	37.6	2,018	xxxxxxx
	Plates—Sheared and Universal	20	4	5,992,710	310,233	20.7	28,973	1,005	622,070	20.8	67,316	2,323
	Skelp	6	5	xxxxxxx	74,829	xxx	3,530	42,562	149,513	xxx	5,513	99,574
	Rails—Standard (over 60 lbs.)	4	6	3,395,000	161,910	19.1	2,180	-	361,488	21.3	14,583	xxxxxxx
	Light (60 lbs. and under)	6	7	436,500	6,809	6.2	1,043	-	18,942	8.7	3,673	xxxxxxx
	All other (Incl. girder, guard, etc.)	2	8	105,000	7,067	26.9	2,226	-	9,944	18.9	3,494	xxxxxxx
	Splice bar and tie plates	14	9	1,310,050	65,113	19.9	730	-	121,782	18.6	1,823	xxxxxxx
	Bars—Merchant	37	10	xxxxxxx	350,803	xxx	28,122	35,617	705,251	xxx	58,244	85,621
	Concrete reinforcing—New billet	15	11	xxxxxxx	144,547	xxx	7,050	-	257,956	xxx	15,383	xxxxxxx
	Rerolling	19	12	xxxxxxx	33,593	xxx	2,418	-	58,490	xxx	4,057	xxxxxxx
	Cold finished—Carbon	18	13	xxxxxxx	48,446	xxx	911	-	101,209	xxx	3,639	xxxxxxx
	Alloy—Hot rolled	15	14	xxxxxxx	61,856	xxx	3,339	7,727	117,419	xxx	6,725	15,104
	Cold finished	14	15	xxxxxxx	5,668	xxx	165	-	11,174	xxx	433	xxxxxxx
	Hoops and baling bands	5	16	xxxxxxx	12,681	xxx	420	-	24,453	xxx	764	xxxxxxx
	TOTAL BARS	56	17	11,547,881	657,594	22.8	42,425	43,344	1,275,952	22.1	89,245	100,725
	Tool steel bars (rolled and forged)	15	18	101,014	3,315	13.1	174	-	7,424	14.7	196	xxxxxxx
	Pipe and tube—B. W.	10	19	1,756,943	127,240	29.0	4,329	-	224,212	25.5	8,981	xxxxxxx
	L. W.	11	20	1,453,028	62,323	17.2	2,221	-	142,193	19.6	6,546	xxxxxxx
	Electric weld	4	21	614,000	27,875	18.2	1,450	-	60,783	19.8	7,026	xxxxxxx
	Seamless	14	22	2,942,900	251,355	34.2	18,346	-	508,739	34.6	45,748	xxxxxxx
	Conduit	7	23	155,270	10,084	26.0	368	-	18,356	23.6	698	xxxxxxx
	Mechanical Tubing	5	24	189,000	12,334	26.1	1,159	-	25,165	26.6	2,279	xxxxxxx
	Wire rods	18	25	xxxxxxx	82,978	xxx	7,866	32,453	150,680	xxx	17,399	54,877
	Wire—Drawn	38	26	1,941,984	176,736	36.4	13,722	2,704	329,650	33.9	22,412	4,555
	Nails and staples	19	27	1,078,572	102,085	37.9	6,684	-	191,363	35.5	11,153	xxxxxxx
	Barbed and twisted	16	28	425,477	39,612	37.2	8,574	-	66,143	31.1	12,187	xxxxxxx
	Woven wire fence	15	29	702,825	49,269	28.0	400	-	99,333	28.3	601	xxxxxxx
	Bale ties	11	30	110,677	11,242	40.6	180	-	18,267	33.0	180	xxxxxxx
	All other wire products	4	31	23,600	799	13.5	3	-	1,758	14.9	4	xxxxxxx
	Fence posts	14	32	147,100	14,105	38.4	287	-	23,517	32.0	484	xxxxxxx
	Black plate	12	33	503,015	71,534	56.9	1,809	23,023	134,299	53.4	3,875	41,687
	Tin plate—Hot rolled	11	34	1,631,956	173,552	42.5	36,291	-	363,802	44.6	106,406	xxxxxxx
	Cold reduced	10	35	1,828,100	209,692	45.9	14,011	-	375,464	41.1	28,694	xxxxxxx
	Sheets—Hot rolled	19	36	xxxxxxx	176,798	xxx	20,435	1,749	348,362	xxx	45,314	2,974
	Hot rolled annealed	20	37	xxxxxxx	179,672	xxx	9,133	73	345,420	xxx	22,015	152
	Galvanized	15	38	xxxxxxx	187,727	xxx	20,619	-	357,336	xxx	40,378	xxxxxxx
	Cold rolled	19	39	xxxxxxx	188,312	xxx	18,981	-	419,066	xxx	43,221	xxxxxxx
	All other	15	40	xxxxxxx	48,258	xxx	3,117	-	98,971	xxx	6,767	xxxxxxx
	TOTAL SHEETS	26	41	10,444,353	780,767	29.9	72,285	1,822	1,569,155	30.0	157,695	3,126
	Strip—Hot rolled	25	42	3,283,200	165,594	20.2	5,763	14,133	336,689	20.5	18,969	30,450
	Cold rolled	37	43	1,178,961	65,157	22.1	2,715	-	126,916	21.5	4,464	xxxxxxx
	Wheels (car, rolled steel)	5	44	380,319	12,551	13.2	954	-	26,790	14.1	1,289	xxxxxxx
	Axles	4	45	425,900	6,912	6.5	2,738	-	17,116	8.0	5,857	xxxxxxx
	Track spikes	11	46	302,350	11,676	15.4	347	-	24,136	16.0	657	xxxxxxx
	All other	4	47	22,107	1,094	19.8	45	-	2,683	24.3	48	xxxxxxx
	TOTAL STEEL PRODUCTS	142	48	xxxxxxx	4,417,843	xxx	339,235	357,138	8,747,803	xxx	799,137	682,869
	Estimated total steel finishing capacity based on a yield from ingots of 70.6 %	-	49	48,152,500	xxxxxxx	33.7	xxxxx	xxxxxxx	xxxxxxx	33.5	xxxxxxx	xxxxxxx
	Pig iron, ferro manganese and spiegel	29	50	xxxxxxx	615,104	xxx	82,239	66,862	1,472,700	xxx	190,136	154,970
	Ingot moulds	4	51	xxxxxxx	25,779	xxx	1,664	-	51,184	xxx	3,191	xxxxxxx
Iron Products	Bars	12	52	230,519	2,958	5.1	1	52	7,267	6.3	17	52
	Pipe and tubes	4	53	185,457	5,542	12.0	111	-	12,538	13.5	325	xxxxxxx
	All other	2	54	63,560	2,172	13.7	42	668	3,889	12.2	142	1,276
	TOTAL IRON PRODUCTS (ITEMS 52 to 54)	14	55	421,576	10,672	10.1	154	720	23,694	11.2	484	1,328

Total steel products produced for sale, less shipments to members of the industry for conversion into further finished products: Current quarter 4,060,705 *G.T.;* 33.7 *% of Finishing Capacity.*
To date 8,064,934 *G.T.;* 33.5 *% of Finishing Capacity.*
The above tonnages represent 70.6 *% of the ingots produced by companies whose products are included above.*

Total companies included-165

July Ingots Up 21 Per Cent

■ STEEL ingot production in July totaled 1,982,058 gross tons, an increase of 21 per cent over June's 1,638,277 tons, according to the American Iron and Steel institute. Compared with the July, 1937, output of 4,556,304 tons a decline of nearly 57 per cent is shown.

July production represented an operating rate of 33.42 per cent of the industry's capacity. In June the rate was 28.46 per cent and in July, a year ago, 78.48 per cent.

Weekly average production in July was 448,429 tons, in June 381,883 tons, and in July, 1937, 1,030,838 tons.

Production for seven months totals 12,801,202 tons, compared with 33,315,264 tons in the corresponding period of 1937.

U. S. Steel Shipments Off

■ Shipments of finished steel by the United States Steel Corp. in July were 441,570 tons, a decline of 36,487 tons, 7.6 per cent, from the June total of 478,057 tons and 745,182 tons less than the 1,186,752 tons shipped in July, 1937. Shipments for seven months totaled 3,451,924 tons, compared with 8,801,026 tons in 1937.

District Steel Rates

Percentage of Ingot Capacity Engaged in Leading Districts

	Week ended Aug. 13	Change	Same week 1937	Same week 1936
Pittsburgh	30	— 3	83	68
Chicago	33.5	— 4.5	86	71
Eastern Pa.	30	+ 1	69	50
Youngstown	43	+ 3	78	79
Wheeling	54	None	94	95
Cleveland	41	+ 3	85	82
Buffalo	42	+ 2.5	86	81
Birmingham	50	None	96	67
New England	40	+ 5	65	70
Cincinnati	65	+ 7	89	72
St. Louis	30	None	77	†
Detroit	52	+14	100	93
Average	40	None	84	70.5

†Not reported.

U. S. STEEL CORP. SHIPMENTS

(Inter-company shipments not included)
(Tons)

	1938	1937	1936	1935
Jan.	518,322	1,149,918	721,414	534,055
Feb.	474,723	1,133,724	676,315	583,137
Mar.	572,199	1,414,399	783,552	668,056
April	501,972	1,343,644	979,907	591,728
May	465,081	1,304,039	984,097	598,915
June	478,057	1,268,550	886,065	578,108
July	441,570	1,186,752	950,851	547,794
7 mo.	3,451,924	8,801,026	5,982,201	4,101,793
Aug.		1,107,858	923,703	624,497
Sept.		1,047,962	961,803	614,933
Oct.		792,310	1,007,417	686,741
Nov.		587,241	882,643	681,830
Dec.		489,070	1,067,365	661,515
Y'rly adj.			†40,859	†23,750
Total		12,825,467	10,784,273	7,347,549

†Deduction.

Steel Ingot Statistics

Monthly Production—Complete for Bessemer; Open Hearth, Calculated from Reports of Companies Making 98.29 per cent in 1936

1938	—Open Hearth— Gross tons	Per cent of capacity	—Bessemer— Gross tons	Per cent of capacity	—Total— Gross tons	Per cent of capacity	Weekly production, all companies, gross tons	Number of weeks in month
Jan.	1,632,773	30.25	99,991	18.27	1,732,764	29.15	391,143	4.43
Feb.	1,578,233	32.38	125,493	25.40	1,703,726	31.74	425,931	4.00
March	1,854,669	34.36	157,737	28.83	2,012,406	33.85	454,268	4.43
April	1,793,522	34.31	131,644	24.84	1,925,166	33.44	448,757	4.29
May	1,676,215	31.06	130,590	23.87	1,806,805	30.39	407,857	4.43
June	1,519,589	29.07	118,688	22.40	1,638,277	28.46	381,883	4.29
July	1,854,076	34.43	127,982	23.44	1,982,058	33.42	448,429	4.42
7 mos.	11,909,077	.....	892,125	.....	12,801,202	.....	422,621	30.29
1937								
Jan.	4,426,227	84.07	292,209	54.38	4,718,436	81.32	1,065,110	4.43
Feb.	4,083,070	85.89	331,629	68.34	4,414,699	84.27	1,103,675	4.00
March	4,814,926	91.45	403,400	75.07	5,218,326	89.94	1,177,952	4.43
April	4,682,084	91.83	388,783	74.71	5,070,867	90.25	1,182,020	4.29
May	4,769,238	90.59	382,671	71.21	5,151,909	88.79	1,162,959	4.43
June	3,900,108	76.50	284,615	54.69	4,184,723	74.48	975,460	4.29
July	4,220,848	80.10	335,456	62.56	4,556,304	78.48	1,030,838	4.42
7 mos.	30,896,501	.....	2,418,763	.....	33,315,264	.....	1,099,876	30.29
Aug.	4,504,567	85.29	373,259	69.46	4,877,826	83.83	1,101,089	4.43
Sept.	4,021,035	78.80	268,472	51.71	4,289,507	76.30	1,002,221	4.28
Oct.	3,204,209	60.67	188,715	35.12	3,392,924	58.31	765,897	4.43
Nov.	2,040,480	39.90	113,885	21.88	2,154,365	38.23	502,183	4.29
Dec.	1,386,188	26.31	86,833	16.19	1,473,021	25.37	333,263	4.42
Total	46,052,980	74.20	3,449,927	54.54	49,502,907	72.38	949,423	52.14

Percentages of capacity operated for 1938 are calculated on weekly capacities of 1,218,342 gross tons of open-hearth ingots and 123,514 gross tons of bessemer ingots, total 1,341,856 gross tons; based on annual capacities as of Dec. 31, 1937, as follows: Open-hearth ingots, 63,524,356 gross tons; bessemer ingots, 6,440,000 gross tons.

Percentages of capacity for the first six months of 1937 are calculated on weekly capacities of 1,188,452 gross tons for open-hearth ingots, 121,308 tons for bessemer and 1,309,760 tons total, based on annual capacities as of Dec. 31, 1936, as follows: Open-hearth ingots, 61,965,862 gross tons; bessemer, 6,325,000 tons; beginning July 1, 1937, on weekly capacities of 1,192,182 gross tons open-hearth ingots and 121,308 gross tons bessemer, total 1,313,490 gross tons; based on annual capacities as follows: Open-hearth ingots, 62,160,362 gross tons; bessemer, 6,325,000 gross tons.

PRODUCTION

■ DESPITE losses of 3 points at Pittsburgh and 4.5 points at Chicago last week, increased production at nearly all other centers balanced and held the national operating rate at 40 per cent.

Cleveland—Gain of 3 points to 41 per cent resulted from small shifts in open-hearth activity. The same rate is scheduled for this week.

Youngstown, O.—Addition of bessemer capacity early last week raised the rate of operations 3 points to 43 per cent. Active open hearths number 38 and bessemer three. The rate is expected to raise to 44 per cent at the beginning of this week, and then reduced to 42 per cent when a bessemer converter is dropped.

St. Louis—Unchanged at 30 per cent, with ten open hearths active. This rate is scheduled for this week.

Cincinnati—Up 7 points to 65 per cent, highest of the year. Some ingots are going into stock.

Birmingham, Ala.—Steady at 50 per cent, with 11 open hearths active. Enlarged schedules are indicated for this week or next. Tennessee Coal, Iron & Railroad Co. announces work will be resumed Aug. 16 in four iron ore mines idle since June 25.

New England—Advanced 5 points to 40 per cent with indications the same rate will hold this week.

Buffalo—Addition of an open hearth and a blast furnace by Republic Steel Corp. raised the rate 2.5 points to 42 per cent.

Central eastern seaboard—Resumption with two open hearths by mill which has been down for a month increased operations 1 point to 30 per cent.

Detroit—Advanced 14 points to 52 per cent, on lighting of three open hearths by Ford Motor Co. Aug. 7. All Ford mills will be operating this week. Two additional open hearths may be lighted this week by the other steel producer here.

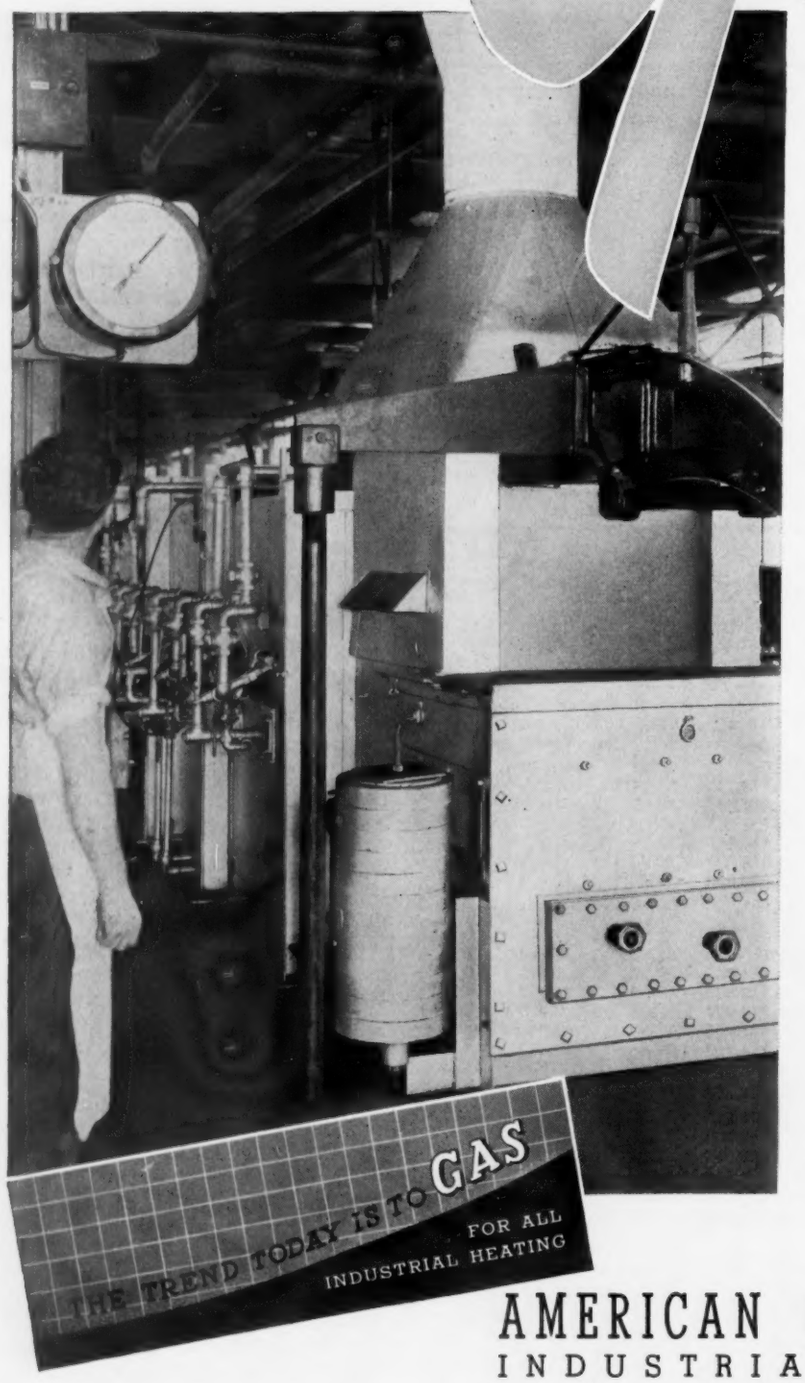
Pittsburgh—Down 3 points to 30 per cent, due to reduced operations by an important producer.

Wheeling—Unchanged at 54 per cent, with probability of the same rate this week.

Chicago—Curtailment by a leading interest last week cut operations 4.5 points to 33.5 per cent. Two other mils show an increased rate and others are unchanged.

■ Directors of M. A. Hanna Co., Cleveland, have declared the regular quarterly dividend of $1.25 a share on $5 cumulative preferred stock, payable Sept. 1 to stockholders of record Aug. 18.

EVEN "STOP-AND-GO" PRODUCTION PROFITS FROM THE USE OF *Gas*



Today's demand for extreme efficiency in production as a partial off-set to "stop-and-go" operations has brought a definitely increased trend to GAS for all industrial heating.

Always a dependable and economical source of heat, GAS today enjoys new advantages of controllability and flexibility that make it the preferred fuel for use under any conditions.

Modern improvements in GAS equipment provide quick heating, uniform heat distribution and an accuracy of control that go far beyond anything industry has ever before known. With an up-to-date GAS installation, any desired temperature or furnace atmosphere can be obtained readily and kept indefinitely.

Investigate how GAS can bring you profits from even "stop-and-go" production.

There's nothing like GAS for

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GAS fired hardening furnace handles 10,000 stampings an hour

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MIRRORS OF MOTORDOM

DETROIT

■ CHIEF topic for speculation these days in motordom is the outlook for production in the coming 12 months. Unofficially the start has been made on new models, and a number of things now hinge on the output of assembly lines in months to come.

In the first place, labor. If auto production, as now seems likely, swings into several months of accelerated production—say, 400,000-car months—will the UAW shake itself into some semblance of the powerful movement of early 1937? Will the pressure be on again to boost wages, as it was in 1937?

Apparently about all the UAW needs to restore its old-time fervor is a few thousand dollars in dues money. And with auto workers returning to their jobs the potential dues-payers are there.

Refill the union treasury and the petty squabbles of Martin, Frankensteen and the communist goblins will be laid at rest. A labor-serving administration, the Wagner act and the NLRB will see to it that union labor in the auto industry is kept on its feet.

More Cautious on Wages

On the matter of wages it is studied opinion that good business this fall will not be productive of higher wages immediately as was the case when production started hitting the top in 1937. There is a feeling that perhaps the tailspin this year was attributable partly to the arbitrary boosting of wages beyond the point where they were economically justifiable.

So remarkably has sentiment improved around here that it is not difficult to find hardy souls who will forecast another 5,000,000-car year for 1939 models. This represents the ultimate in roseate outlooks, being a good 100 per cent over the 2,490,000-car indicated output for the 1938 model year.

When an attempt is made to analyze this optimistic outlook, the only real basis for improvement appears to be the billions of dollars which the government continues to pour into employment and trade channels. If pump priming could bring prosperity in 1937, the prophets argue it can bring prosperity in 1939, and on a sounder basis, since the experience of 1937 will have shown the pitfalls to be avoided this time.

■ IT HAS been a long time since Detroit has witnessed the eagerness to turn out cars which is apparent throughout various sections of the industry today. Plymouth, for example, rushed the first of its 1939 models down the line a week ago and is now talking 7600 jobs for

BY A. H. ALLEN
Detroit Editor, STEEL

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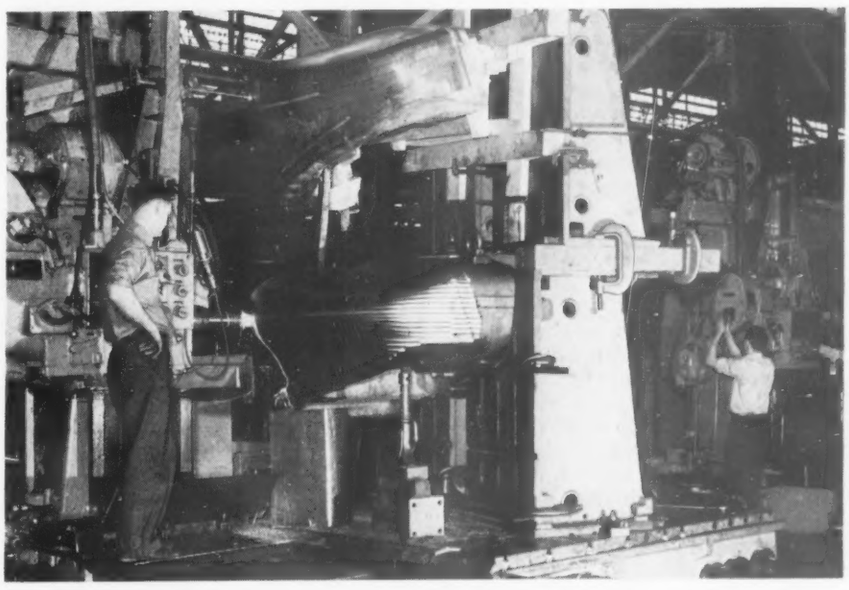
Cutting Fender Dies Mechanically



■ **KELLER automatic die cutting machine shaping a front fender die in Pontiac plant. The wood model above is being followed by a tracer which guides the cutting spindle below traveling across the rough cut chrome-nickel iron die. About seven days are required to cut such a fender die and the completed die is accurate to 1/16-inch; after this about ten more days are required for hand finishing operations**

August, revised upward some three or four times. Elsewhere schedules are being moved ahead from two to four weeks and parts suppliers are being harried to get out shipments.

Pontiac is reportetd to have moved ahead new model production about 30 days to around Sept. 1. General Motors Truck division, originally not scheduled to assemble any more trucks until Oct. 15, now is planning to make deliveries of completed jobs by Oct. 1. Packard releases are being stepped up and the rush is on there.

It is an encouraging sight to travel through some of the industrial sections of this city at night and see plants ablaze with light and wheels turning at full speed once again.

■ THE REMARK has been heard automobile builders have designed new models to fit WPA incomes. As a salty commentary on the times this is probably a sound observation, but not strictly true. However, price will be one of the major talking points on the new models. Officials are mum on the subject of whether a general reduction in retail price is coming; at least the margin will be there if sales forces decide the market needs a dose of lower prices.

Volume producers are going to make a stronger bid for sales in the lower income groups. For example, always assuming present plans go unchanged, Pontiac and Oldsmobile will produce new lighter and less expensive 6-cylinder lines, priced down close to the Chevrolet-Ford-Plymouth level. These "economy" sixes probably will have the same wheelbase as the larger six, and in fact probably will have the same engine except for a shorter stroke.

Olds, it is said, has developed an entirely new motor for its six-cylinder lines, and all in all will have more mechanical changes to offer next year than most of the other producers.

Some months ago, it will be recalled, the report was current that both Olds and Pontiac had planned to discontinue their 8-cylinder models for 1939. But so insistent was dealer demand for retaining these larger models, which comprise from 20 to 30 per cent of total sales volume, it was decided to continue their production. Meanwhile plans for the economy sixes went ahead undisturbed, so these two builders may have three series of models for 1939 instead of the two originally contemplated.

Ford, too, is looking for predominant interest in its less costly line next year, or the reverse of the experience this year. In projecting material buys for the initial lot of new cars, a ratio of 300,000 standard models to 30,000 deluxe is mentioned. The standard probably will be the present 112-inch wheelbase model with 85-horsepower motor, the latter somewhat lightened and smoothed up in operation. The deluxe will be the often-discussed 116-inch wheelbase model with 100-horsepower motor.

In the past two weeks, there has been some activity in production of Ford body dies for 1939 lines. It is a virtual impossibility to gain any conception of the appearance of new models from these dies, since they are split up into sections for casting and later assembled. This sectioning also serves the useful purpose of secreting new model lines from the eyes of the curious.

It seems fairly well established at this point that Ford and Lincoln will make shift to hydraulic brakes next year, although official confirmation naturally is lacking. However, various sources around Detroit authenticate this information, and a wire service report out of St. Louis recently carried the information that stock of the Wagner Electric Corp. was climbing on the strength of rumors the company would supply hydraulic brakes to Ford next year. However, local representatives of the company had "nothing to say" on the report.

If Ford and Lincoln make the change to hydraulic brakes, it will mark virtually complete acceptance of this type of braking for automobiles.

Sources close to the brake industry will point out this rumor is one of those hardy perennials which has cropped up at new model time every year for the past six. In fact last year, production lines had been set up in an Indiana plant to start at a moment's notice on hydraulic brakes for Ford, and it seemed a foregone conclusion Ford had finally been persuaded to make the change. At the last minte, though, Mr. Ford announced mechanical brakes would be continued.

The Lockheed Hydraulic Brake Co. controls all such brakes in use today. In turn this company has given a direct license to Chrysler, and an exclusive manufacturing license to Wagner, excepting Ford, Packard and the Gentral Motors lines. General Motors is supplied by Bendix Products Corp., and the Delco Products division. The Bendix hydraulic brake is of the duo-servo type, different from the Lockheed design, but nevertheless made under license arrangement. Packard is supplied by Bendix.

Efforts have been unceasing to sell Mr. Ford on hydraulic brakes. Demonstration cars have been fitted out by all manufacturers of the brakes and dispatched to Ford for tests. But until Mr. Ford himself definitely commits the company to their adoption, it is useless to assume the change is official.

Wagner Electric Corp. came into the brake picture rather peculiarly, since the company is considered to be primarily an electric motor manufacturer. But some years ago, with motor business slack, the company was casting about for some new line to acquire and by a fortunate coincidence it was determined to enter the hydraulic brake field, this at a time when hydraulic brakes for automobiles were rare. Since that time, this end of the business has proved most profitable.

■ SO POPULAR has been the relocation of automobile gearshift levers from floor to steering column and dash that next year will see this systetm adopted as standard by some manufacturers. It is reliably reported Chevrolet has released parts for a new type of gearshift lever mounted on the steering column as standard equipment.

Complete returns for July on Chevrolet sales show the movement of new cars and trucks to have totaled 51,047, an increase of 11.9 per cent over June. In only two previous years have Chevrolet July sales passed the June mark. Deliveries of Cadillac-La Salle models in July missed the June total by only 5 per cent, compared with declines of as high as 38 per cent in the same months of other years. Ford sales in July practically matched the Chevrolet increase, being 12 per cent over June, trucks alone being up 42.5 per cent.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1936	1937	1938
Jan.	377,244	399,186	227,744
Feb.	300,810	383,900	202,872
March	438,943	519,022	238,753
April	527,625	553,231	238,133
May	480,518	540,377	210,183
June	469,368	521,153	189,399
6 mos.	2,594,508	2,916,869	1,306,032
July	451,206	456,909	*130,000
Aug.	275,934	405,072	.....
Sept.	139,820	175,630	.....
Oct.	230,049	337,979	.....
Nov.	405,799	376,629	.....
Dec.	518,958	346,886	.....
Year	4,616,274	5,015,974	.....

*Estimated.

Estimated by *Ward's Reports.*

Week ended	
July 16	42,010
July 23	32,070
July 30	30,390
Aug 6	14,771
Aug. 13	13,790

	Week ended Aug. 13	Aug. 6
General Motors	9,800	10,800
Chrysler	1,100	800
Ford	.....	575
All others	2,890	2,596

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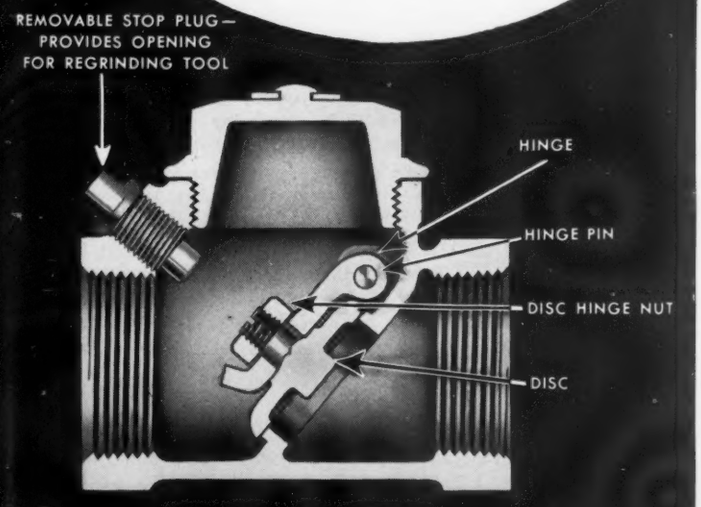
Crane No. 35 Brass Swing Check Valve. Regrinding type. Fully described on page 34 of your Crane No. 52 Catalog. Cross section shown below.



IT'S WHAT'S INSIDE THAT COUNTS!

FOR INDUSTRIAL SERVICE

Crane Swing Check Valves police your piping—permitting flow in one direction only—preventing dangerous back flow . . . are often the most important valves in a piping system. On power lines or process lines—they control cold water, hot water, steam or gas. Pipe line policing is tough on check valves—they're subject to a lot of abuse. And because service requirements differ in every application, satisfactory performance depends on your selection of good check valves as well as valves of the proper type.

Crane makes Swing Checks for every type of service. Some have metal discs, others discs of leather. Some have outside levers and weights; and still others, the foot valves, are specifically for use on the suction line of pumps to do away with hand priming.

Or take the regrindable disc check. Here is a valve with a swivel disc that may be quickly ground while the valve is in the line—and with no other tool than a screwdriver. On liquid lines they assure constant, tight seating with no danger from leakage.

Every specific application requires a specific check valve—one that is readily available in the Crane line. The new Crane booklet "Checking Up on Check Valves" contains valuable information on the selection and application of checks for any service. A copy will be sent upon request. Be sure to consult the Crane salesman on your check valve requirements.

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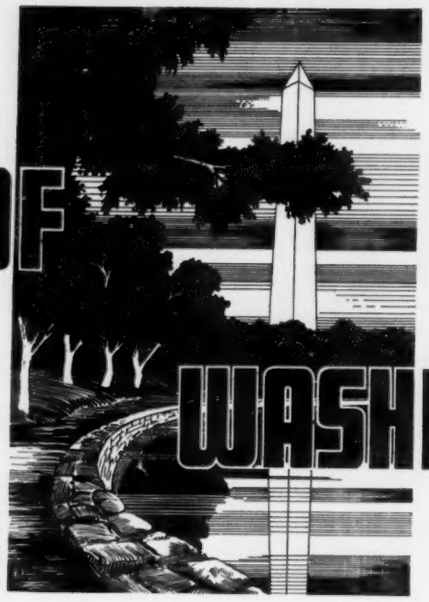
NATION-WIDE SERVICE THROUGH 134 BRANCHES AND MORE THAN 500 WHOLESALERS

WINDOWS OF WASHINGTON



WASHINGTON

■ ORGANIZATION work at the national economic committee's headquarters in the federal trade commission building is proceeding slowly. Leon Henderson, secretary, and who was connected with the NRA organization, has said he does not propose to rush into the establishing of a large organization as the Blue Eagle did when it began operations.

When this was written, the committee had not called on any of the six government organizations represented on the committee to make an investigation of any project. This does not mean groundwork is not being done by the government bodies, but the committee, as such, has not yet requested specific information.

New Deal "Suggestions"

If the present system continues, the headquarters organization of the economic committee will be small. The scheme now is for the committee to call upon the proper government organization for a certain study. If that body does not have sufficient personnel, the committee will allow an appropriation for additional help.

The six government bodies named in the monopoly law to be called on for information are equipped to carry on extensive investigations, and rather than duplicate a government organization, the committee has decided to call on the government department itself to make necessary investigations.

Typical example of how this would work: If the committee wanted information on the steel industry, it probably would call on the departments of commerce, justice and labor, as well as the federal trade commission and the securities and exchange commission. In a case of this kind, according to committee officials, a certain part of the investigative work would be turned over to each of the government organizations. At the moment, personnel at the headquarters of the committee is small.

BY L. M. LAMM

Washington Editor, STEEL

The story has been circulating in Washington that a New Deal economist has prepared, at the suggestion of a member of the committee, a memorandum showing proposed methods of reforming or controlling the business system should have certain objectives in mind. These would include provision for more goods, better goods and cheaper goods, more jobs, better paying jobs and steadier jobs. The New Deal economist also believes the work of the committee should be done in an effort to provide continuous ready access to capital financing to create and maintain additional plants, and to provide for the continued development of the arts.

Would Control Competition

Where a high degree of competition will accomplish the result, that method should be used; where a high degree of cartelization under suitable control will accomplish the result, that should be the method; where quasi-public ownership produces the result, that should be used.

The answers, of course, will be different in different fields. No one seems to know just how seriously this memorandum is taken by the member of the economic committee for whom it was prepared.

It is not believed the committee itself will meet for some weeks and it is doubtful if any hearing will be held until October or later.

WAGE-HOUR DIVISION ORGANIZATION AT STANDSTILL

Work in connection with the new wages and hours division of the department of labor is practically at a standstill owing to the fact that Elmer Andrews, recently appointed administrator, has not left his work in New York to take up his new job.

The act itself does not become operative until the latter part of October, but administrative circles believe the division will be functioning to some extent by that time.

The bureau of labor statistics and other divisions of the department of labor are compiling data for Mr. Andrews.

Mr. Andrews soon will come to Washington to select some of his immediate assistants who will go ahead with organization work.

CIO TO SPONSOR NEW CONTRACT ACT AMENDMENTS

Further amendments to the Walsh-Healey government contract act, which will be broader than those which failed of action at the last session of congress, will be sponsored at the new session in January, according to an announcement made by the CIO last week.

Among other things, the amendments which were backed by CIO were to have compelled government contractors to observe not only the Walsh-Healey act but decisions of the national labor relations board.

MEEHAN TO HEAD NEW BUSINESS REVIEW DIVISION

A new division of business review has been created in the bureau of foreign and domestic commerce of the department of commerce by re-

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FORMULA FOR SPRING DESIGN

$$V = \frac{2GPF}{S^2}$$

V is volume
G is torsional modulus
P is load carried
F is deflection
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Every user of Spring Wire takes for granted uniform size, stiffness, clean finish and proper cast. Without these qualities wire cannot be made into uniform springs. There are still other factors however . . . elastic limits and toughness. These cost money to build into wire but are often economical purchases. The saving in weight by using a wire with a high elastic limit may well offset the increase in the price per pound. Likewise it is wasteful to use a wire with elastic limit beyond requirements. In good commercial qualities, elastic limits may range from 80,000 PSI to 120,000 PSI in hard drawn spring wires, and from 100,000 PSI to 200,000 PSI in oil tempered wires, depending upon size and treatment. Special wires may be produced with even higher elastic limits but at the expense of toughness. There is one Wissco Wire of exactly the proper quality for your work. Let us point it out to you.

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grouping certain sections of the bureau. M. J. Meehan has been appointed chief of the division.

Creation of the division does not involve any change in the bureau's major functions or addition of new personnel, but brings together into one administrative unit several sections whose functions are closely related. The realignment, according to officials, is designed to strengthen and improve the services to business being rendered through the existing facilties.

The division's major responsibility will be the assembly, analysis, and dissemination of data on general business conditions. It will conduct a continuing study of the current fluctuations in activity, and of the forces influencing these movements, for the purpose of providing the business community, the department, and other agencies with reliable and comprehensive reports which can be utilized as a guide to current operations. Part of this work will embrace study of available data on United States foreign trade to bring into relief the significant regional and commodity shifts in our trade with foreign countries.

Mr. Meehan was on the staff of the Latin-American division of the bureau in 1923, serving there until 1929. He left the department for a couple of years, returning as a member of the division of economic research. During the past year, Mr. Meehan was granted leave by the bureau to serve as a faculty consultant at Harvard university for the purpose of assisting in the establishment of the new graduate school of public administration.

RFC GRANTS LOANS TO INDUSTRIAL INTERESTS

The reconstruction finance corporation granted a large number of loans during June to industrial interests. Included are: Bayonne Bolt Corp., Bayonne, N. J., $125,000; Erie Steel Co. Inc., Philadelphia, $3000; Rolle Casting Co., Philadelphia, $12,500; Twin City Iron & Metal Co. Inc., Bristol, Tenn., $20,000; Kasle Steel Corp., Detroit, $50,000; Snyder Tool & Engineering Co., Detroit, $75,000; Independent Tool & Gear Co., Dexter, Mich., $10,000; and Freeland Iron & Metal Co. Inc., Lansing, Mich., $15,000. While these loans were authorized, no actual payments had been made up to the last of July.

FINISH FIRST PHASE OF "LARGEST BOOKKEEPING JOB"

Crediting of each employe's wages received during 1937 to his social security account under the old-age insurance system has been completed. When the board, working at the rate of over a million a day, finished recording the wage items reported by employers, it completed the first phase of the "world's largest bookkeeping job."

Since the amount of each employe's old-age insurance benefits will be determined by his total wages received in employment covered by the system, a separate wage account, identified by an account number, is maintained for every worker covered by the plan.

Each worker is accumulating credits, on the basis of his wages, toward a monthly old-age retirement income. If the employe's earnings by the time he reaches age 65 do not qualify him for a monthly retirement income, or if he dies before receiving the minimum amount to which his wages entitle him, the system provides for a single payment, based on the total amount of his wages, to the worker or his heirs, as the case may be.

Wages received by each employe in occupations covered by the system are reported regularly to the government by employers. During 1937, the first year the system was in operation, employers reported their employes' wages every six months, but under a change in regulations effective Jan. 1 reports now are made every three months. Employer's wage reports are filed with the bureau of internal revenue as a part of their tax returns. These reports are checked against tax returns by the bureau and then turned over to the social security board for the recording of each employe's wages.

FTC MODIFIES DEFINITION OF CUTLERY STAINLESS STEEL

The federal trade commission has modified the definition of cutlery stainless steel as set forth in an order issued in the case of the National Silver Co., New York, in February, 1937.

In its former order the commission prohibited the use of the word "stainless" as a trade name, brand, stamp, or label for knives or flatware cutlery or in advertising or representing the same unless such products were "made of steel containing from 9 per cent to 16 per cent chromium and containing not more than 0.7 per cent carbon." In a modified order, the commission directs the word "stainless" may not be used as theretofore indicated "unless such knives and flatware cutlery are made from an alloy commonly known in the trade as stainless steel, produced from iron, chromium and carbon or other alloying element, said alloy having the ability to resist corrosion, high temperature, erosion and abrasion; and being either wholly or substantially immune to the action of most corrosive agents, including alkaline materials, fruit acids, nitric acids, dampness and water, salt air and salt water, and having the further ability to withstand exposure to the weather, including rain or snow, without corroding; and when hardened, or hardened and tempered, ground and polished, being practically untarnishable to the action of the before-mentioned corrosive agents."

Under the terms of the modified order, the former directions of the commission with respect to branding and advertising chromium-plated knives and flatware cutlery are limited in the case of this respondent to plated products with a carbon steel base.

GERMAN STEEL OUTPUT STILL SHORT OF DEMAND

Although German output of both pig iron and steel ingots during May was considerably in excess of April, total needs of the domestic market could not be fully satisfied, according to the American consul at Cologne. Exports have continued at a low level. However, these two factors are sighted as the cause of an additional improvement in the supply of those German consumers who have been alloted quotas under the prevailing control system. It is stated deliveries in this category were effective promptly in May and during the previous months. Nonprivileged consumers, however, were compelled to wait unduly long for delivery, and in numerous instances they also failed to obtain the desired quantities and classes.

The report states exports of iron and steel products from Germany, including scrap, during May aggregated 222,189 metric tons compared with 200,548 tons in April. Imports totaled 166,322 tons against 156,101 tons. The low level of German exports during May was attributed to the uncertainty regarding the extension of the International Steel Corp. and its subcartels.

It is further stated the German iron and steel industry feels confident incorporation of the Austrian manufacturers in the German export cartels will not raise any difficulties in connection with the increase of the German export quota in the international steel export cartel which was extended until Dec. 31, 1940.

The opinion is unanimous, however, it is stated, that there are considerable obstacles to giving the Austrian manufacturers full satisfaction, particularly in regard to prices after causing them to join the German syndicate governing the domestic market. The German syndicate prices are lower than have been the quotations of the Austrian producers, and there are also difficulties in finding a proper basis for fixing quotas for Austrian rolling mills. This satisfactory basis is lacking because the Austrian level of output is considerably below Germany's.

MEN OF INDUSTRY

■ W. A. DANNER, at present with the Chicago office of American Rolling Mill Co., Middletown, O., will become manager of the new district sales office to be established in Minneapolis Sept. 1. Mr. Danner has been associated with Armco 16 years, first in the plant at Middletown and later in various positions in the sales division. He will be assisted by S. A. Yager, who has been affiliated with the company nine years. In recent years Mr. Yager has been located in Minneapolis.

♦

Ralph Fry, heretofore associated with the Standard Sanitary Mfg. Co., Pittsburgh, has been added to the staff of the Ferro Enamel Corp., Cleveland.

♦

James Macdonald, purchasing agent, Baldwin Locomotive Works, Philadelphia, has been appointed director of sales. George C. Enge has been named acting purchasing agent.

♦

T. N. Wilder has joined the advertising staff of Carnegie-Illinois Steel Corp., Pittsburgh. He formerly had been associated with the advertising department of Jones & Laughlin Steel Corp., Pittsburgh.

♦

Wesley D. Low, P.O. box 1124, Knoxville, Tenn., has been appointed by the Lewis-Shepard Co., Watertown, Mass., to handle its line of lift and floor trucks, portable elevators, skid platforms, and other material handling equipment.

♦

W. R. Phibbs has been appointed assistant to the president, Jones & Laughlin Steel Corp., Pittsburgh. Mr. Phibbs has been with Jones & Laughlin since 1936, engaged in special duties. He formerly was general manager of operations, Columbia Steel Co., San Francisco.

W. A. Danner

♦

P. Y. Danley will become manager of the reorganized air conditioning department of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., Sept. 1, with headquarters at the East Springfield, Mass., plant. S. F. Myers has been named assistant manager, with headquarters in Chicago. Mr. Danley, who will be responsible for all commercial and household air conditioning activities, has named H. F. Hildreth to direct the sale of home air conditioning equipment. Mr. Hildreth will be located at the East Springfield plant.

The new department will function as a separate organization and will not be directly associated with the present merchandising division as it has been in the past.

♦

Sam C. Mitchell has resigned as director of advertising and sales promotion, Kelvinator division of Nash-Kelvinator Corp., Detroit. Mr. Mitchell, who has been with Kelvinator the past six years, was previously a sales executive with the Hudson Motor Car Co. and the Reo Motor Car Co.

♦

John H. Ross, superintendent of lapweld mills, Gary works, National Tube Co., has retired after 48 years of service, 34 of which were consecutive. He began his 34 years of continuous employment in 1904 at the Lorain, O., works. Previously he had been associated with the company 14 years, but left to join Westinghouse Electric & Mfg. Co. for a three-year period.

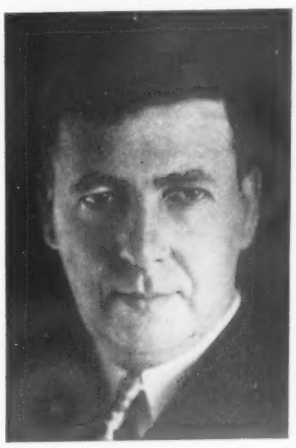
♦

C. H. McAleer, president, McAleer Mfg. Co., Detroit, has announced that Louis F. Davis, vice president and treasurer, will also act as general manager. A. H. Regener continues as secretary as well as credit manager. A. G. Neubauer is in charge of sales to distributors. C. J. Kennedy is in charge of sales to manufacturers. F. A. Weihe Jr. is factory manager and Ernest Hummitch, purchasing agent and advertising manager.

♦

Donald C. Bakewell, since June, 1937, vice president of Blaw-Knox Co., Pittsburgh, has been elected a director. Before joining Blaw-Knox early in 1937, Mr. Bakewell was vice president and chairman of the executive committee, Continental Roll

W. R. Phibbs



James Suttie

Who has been named general manager in charge of sales and production, industrial division, American Steel Foundries, Chicago, as noted in STEEL, Aug. 8, page 28. He has been associated with American Steel Foundries since 1911, and from 1929 until his present appointment had been manager of the Indiana Harbor works. Mr. Suttie is a member, Steel Founders Society of America, American Foundrymen's association and Army Ordnance association

D. C. Bakewell

& Steel Foundry Co., East Chicago, Ind.

♦

Richard S. Shutt has been appointed supervisor of chemical research at Battelle Memorial institute, Columbus, O. He goes to Battelle from a research position with American Cyanamid & Chemical Co. He previously was employed by Sherwin-Williams Co., and for several years was research chemist with E. I. du Pont de Nemours & Co., Wilmington, Del.

♦

Percy D. Peck has been named manager, metal trim department of the fireproof division, Milcor Steel Co., Milwaukee. His experience covers a period of 28 years in all

Percy D. Peck

phases of interior metal trim production, design and sales. He joined Knapp Bros. Mfg. Co., manufacturer of interior metal trim, in 1910. In 1923 he was promoted to general superintendent; in 1928 became vice president in charge of production, and in July, 1934, was made vice president and general manager, from which position he resigned recently.

♦

John F. Tinsley, Worcester, Mass., for 20 years vice president and general manager, Crompton & Knowles Loom Works, Worcester, and a director of the New Enigland council since its inception in 1925, has been elected president of Crompton & Knowles to succeed the late Dr. Homer Gage. Well known in New England and national industrial affairs, Mr. Tinsley is chairman of the council's community development committee.

DIED:

■ HOWARD H. McCLINTIC, 72, well known engineer and one of the founders, McClintic-Marshall Construction Co., Pittsburgh, in that city, recently. The McClintic-Marshall company was absorbed by Bethlehem Steel Co. in 1931. Mr. McClintic was vice president, Pitt Securities Corp., and Union Shipbuilding Corp.; a director of the Fidelity Trust Co., and a trustee, Koppers Co. of Massachusetts.

Richard S. Shutt

♦

George F. Ruch, 40, assistant to the president, H. C. Frick Coke Co., Pittsburgh, in that city, recently.

♦

Paul F. Thayer, 56, president and secretary, Harr-Thayer Iron Co., Youngstown, O., July 26 in that city.

♦

William F. Ebbing, 52, president, Detroit Edge Tool Co., Detroit, in Detroit, Aug. 2.

♦

Frank S. Van Valkenburg, 52, former superintendent, Jaxon Steel Products Co., Jackson, Mich., in that city, July 25.

♦

Robert L. Peet, 49, sales manager, Great Lakes Engineering Works, Detroit, Aug. 2 in Battle Creek, Mich., while on a business trip.

♦

Thomas S. Goslin, 56, assistant sales manager, machinery division, R. D. Wood Co., Philadelphia, in Allentown, Pa., recently.

♦

Charles U. Stephens, 44, assistant chief engineer at Detroit for Thompson Products Co., in that city, Aug. 8. He had been a resident of Detroit for 26 years and was a member, Engineering Society of Detroit, and American Society for Metals.

♦

Robert H. Hill, 60, president, Hill Bolt Corp., Detroit, Aug. 7 in that city. He went to Detroit in 1915 from Cleveland where he had been secretary, Upson Nut Co. After serving as vice president and general manager of the American Bolt Corp., Detroit, he founded his own company.

♦

John Henry Gray, 74, retired construction, civil and consulting engineer, at his home in Orange, N. J., Aug. 5. He invented the Gray column, used in skyscraper construction. Until his retirement in 1917, Mr. Gray, who had offices in New York, specialized in structural steel work.

♦

Finley P. Mount, 72, president, Advance Rumely Corp., at his summer home at Burt Lake, Mich., Aug. 7. Born in Crawfordsville, Ind., he practiced law there from 1892 to 1912. In 1915 he was named receiver for the Rumley Co. and following its reorganization he was made president.

♦

Charles W. Baker, 75, who retired in 1928 as chairman of the board and president, American Zinc, Lead & Smelting Co., New York, in New York, Aug. 8. A graduate of Harvard in 1884, he joined Carnegie, Phipps & Co. Ltd. in 1889 and ten years later became junior partner in the Carnegie Steel Co. Ltd. When the Carnegie company was absorbed by the United States Steel Corp. in 1901, Mr. Baker became sales manager in New York for the Carnegie company and other subsidiaries of the new corporation.

GE Employes Bonds Holdings Increase

■ General Electric employes 5 per cent bonds valued at $28,964,390 were owned or subscribed for by 26,297 employes, former employes and dependents of deceased employes as of June 30. This compares with $25,053,940 holdings by 21,992 persons on June 30, 1937, and represents an increase of 15.6 per cent in amount and 19.6 per cent in number over a year ago.

The company's additional pension trust, in which more than 51,000 employes participate, held $11,665,000 of the bonds June 30, compared with $9,932,000 a year ago.

File Industry Gains

■ Substantial increases in employment and payrolls, cost of materials and value of products, for 1937 were reported by manufacturers of files and rasps, according to the bureau of the census.

Wage earners in 1937 numbered 3715, a gain of 27.5 per cent over 2915 reported for 1935; wages totaled $4,815,466, or 57.9 per cent more than the $3,049,357 wage total in 1935. Cost of materials rose 49.8 per cent; value of products 48.7 per cent; and value added by manufacture 48.4.

W. P. Snyder & Co. Founded 50 Years Ago; Parent of Many Industries

■ OBSERVANCE this month by W. P. Snyder & Co. of the 50th anniversary of the founding of the company in Pittsburgh is an especially noteworthy event in contemporary American iron and steel history.

Few iron brokerage concerns and merchant pig iron producing companies that were in business a half century ago, continue as actively and successfully today under the original name as this company, pursuing the original policies laid down

William P. Snyder Sr.

by its shrewd and farsighted founders headed by the late William Penn Snyder Sr.

Retaining its original objective through the years, the company has continued to grow, expanding early into the Lake Superior iron ore mining industry on the Mesabi range, into the Great Lakes vessel industry through owning and operating its own cargo ships, and into the coal-mining industry of western Pennsylvania, where it operates its own mines and beehive coke works in the Connellsville region.

All of these activities center around the continuing successful operation of the Shenango Furnace Co. with blast furnaces in Sharpsville, Pa., producing and marketing merchant pig iron, some of it through its nearby affiliate, the Shenango-Penn Mold Co., producing ingot molds and brass castings.

Directing the varied industrial activities of W. P. Snyder & Co. and shaping the destiny of the $5,000,000 subsidiary, the Shenango Furnace Co. is this group of officers: President, William P. Snyder Jr.; vice president, George L. Collord; secretary, H. M. Wilson, and treasurer, F. A. Demms. They also are officers of another subsidiary, the Shenango-Penn Mold Co., except that Mr. Snyder is chairman of the mold company and H. S. Bradley is president. All of them had long training under the resourceful leadership of William P. Snyder Sr.

Outstanding in this group of widespread activities, from lake iron ore as with the Snyder Mining Co., and vessel interests as the Shenango Steamship & Transportation Co., to pig iron and coal, is the Shenango Furnace Co. with merchant blast furnace stacks at Sharpsville, Pa. The Shenango furnaces have combined annual pig iron producing capacity of 410,000 tons. The Shenango Furnace Co. was incorporated originally under Pennsylvania laws on Jan. 23, 1906, with capital stock of $5,000,000. The main offices then were in the Frick building, Pittsburgh, with branch offices at Sharpsville, Pa., Hibbing, Minn., Wilpen, Pa., and Duluth.

Serves Many Consumers

For many years, therefore, the Shenango Furnace Co. has satisfied the requirements of hundreds of pig iron consumers extending over a wide stretch of the Middle West and the Northwest, with basic bessemer and malleable irons, iron ore, coke and coal, the accumulated tonnage running into many millions.

About the date of its incorporation, the Shenango Furnace Co. acquired by purchase a strong group of important Shenango valley merchant blast furnaces located at Sharpsville. Two such taken over in the spring of 1905 were the Douglas stacks of Pierce, Kelly & Co.; then the stack of the Spearman Iron Co., managed by the veteran John J. Spearman. Also came into the Shenango company the Mable stack of Perkins & Co. Ltd., with Simon Perkins Jr. as chairman and manager, and L. C. Hanna as secretary and treasurer. Its sales agents were M. A. Hanna & Co., Cleveland.

In August following its incorporation, the Shenango Furnace Co. broke ground for a No. 2 stack which was blown in July 10, 1908. Having concluded a long and profitable career, the Douglas furnaces, Nos. 1 and 2, were dismantled in 1908. Thus the company's policy was inaugurated and ever since continued of replacing outmoded stacks with new and larger furnaces equipped with the latest devices and apparatus to keep abreast of the rapidly changing industrial times.

From the beginning of the Shenango Furnace Co., its founder, W. P. Snyder Sr., realized the importance of controlling its own Lake Superior iron ore resources. This was assured by acquiring and maintaining the Shenango, Webb, Whiteside, South Tener and Virginia mines on the Mesabi range with annual capacity of 1,200,000 tons. These are operated by the Snyder Mining Co.

The Shenango company early owned 1500 acres of coal lands in Fayette and Westmoreland counties in western Pennsylvania where its coal is mined, the Wilpen mines having yearly capacity of 250,000 tons of coal; and the 100 beehive ovens, also at Wilpen, having capacity annually of 90,000 tons of coke.

One more link was required to

William P. Snyder Jr.

connect together the Lake Superior iron ore holdings of the Shenango Furnace Co. in the Northwest with the blast furnace, coal and coke properties of the company in western Pennsylvania, and to complete their amalgamation into one of the strongest, well rounded independent companies in the country. Hence from 1906 to 1912 President Snyder built a fleet of large bulk freighters on the Great Lakes to forge this link. The three largest carriers of the fleet are retained—COL. J. M. SCHOONMAKER, 14,000 tons capacity; WILLIAM P. SNYDER JR., same capacity; and SHENANGO, 11,500 tons. The company disposed of two freighters having smaller capacities.

William P. Snyder Sr., was born in 1861 in Hollidaysburg, Pa. son of a noted minister of the Methodist Episcopal church. In Pittsburgh the boy received his education in public schools and became an office boy in the service of Schoenberger & Co., one of Pittsburgh's pioneer iron companies. He formed, in 1880, a partnership with John G. A. Leishman, who also had been employed by Schoenberger & Co.

Under the firm name of Leishman

& Snyder they established and conducted a profitable iron-brokerage business. In 1888 Mr. Leishman was offered an interest in the Carnegie Steel Co. which he accepted, later rising to the office of president, and afterward being named American ambassador to Turkey and Austria. Mr. Snyder purchased his holdings in their partnership, and carried on the business under the name of W. P. Snyder & Co.

With Henry W. Oliver, Mr. Snyder co-operated in a number of important undertakings, Oliver and his associates clearing the way for the present tremendous production of Lake Superior iron ore. To Messrs. Oliver and Snyder is given the credit of being the first to use 100 per cent Mesabi ore in a blast furnace, then thought impossible because of fineness of structure, while today that is standard furnace practice.

Son Follows Father

In 1894 Mr. Snyder was elected vice president of the McClure Coke Co., which office he held until the McClure company was absorbed by the Frick company. In 1904 he was chosen president of the Clairton Steel Co. and completed the building of the steelworks at Clairton, Pa., which in 1906 was taken over by the United States Steel Corp. Meanwhile, he was gradually developing his own smaller company, the Shenango Furnace Co., to which after Mr. Oliver's death in 1904, he devoted practically all his efforts.

Mr. Snyder died in Pittsburgh on Feb. 3, 1921 at the age of 60. He had become chairman of the board of Shenango Furnace Co., but relinquished the duties of president to his son, W. P. Snyder Jr. The younger Mr. Snyder, after being graduated from Yale in 1911, entered W. P. Snyder & Co. and the Shenango Furnace Co., serving years of apprenticeship from clerk on up to assistant to the president, and vice president. In May, 1918, he was elected president. He purchased the Penn Mold & Mfg. Co., Dover, O., maker of ingot molds and removed it to Sharpsville. In 1929 he formed the Snyder Mining Co. of which he is president, to produce Lake Superior iron ore.

The Shenango-Penn Mold Co., Sharpsville, Pa., was incorporated in Pennsylvania March 21, 1927, to manufacture ingot molds, etc. The company also operates brass works at Dover, O., which produces large brass castings, paper mill rolls, bushings, etc.

Two interesting further instances are noted in the successful career of W. P. Snyder Sr. Some years after the formation of the United States Steel Corp., Mr. Snyder was offered the presidency of the corporation. But he declined to accept the honor, preferring to work out the various interests of his own which he had established.

When the Bessemer Pig Iron association, once including about 30 merchant blast furnaces in the Mahoning and Shenango valleys with the late Joseph G. Butler Jr., of Youngstown, O., as manager, was dissolved due to steelworks absorbing many of them, W. P. Snyder & Co. took up part of the association's work—the compilation and calculation of the average monthly market prices of pig iron in the valleys. These averages served for years as the measuring stick for pig iron prices throughout the country, and only in recent years has the company relinquished this task.

W. P. Snyder & Co. with all these subsidiary and affiliated activities, have continued through the years to the present to pursue steadily and actively the original objectives of their founder, distributing and dealing in pig iron, iron ore, coal and coke in serving hundreds of customers located over a widely extended area. In rendering to the trade this invaluable service, W. P. Snyder & Co. have handled millions of tons of iron, steel, fuel and other component materials.

Report on Carbide Tools

■ The Institution of Mechanical Engineers, London, has published a 38-page bulletin concerned with cutting tools research in connection with carbide tools.

It includes manufacture and physical properties of cemented carbides, preliminary tests of tips, shank and method of securing tip, grinding and preparation of cutting edge, tool angles, tip and shank size and shape, disposition of tool relative to work, cutting fluid, chip disposal, cutting tests to determine relation between speeds, feeds and depths of cut as well as some feeds, speeds and depths of cut recommended along with cutting data.

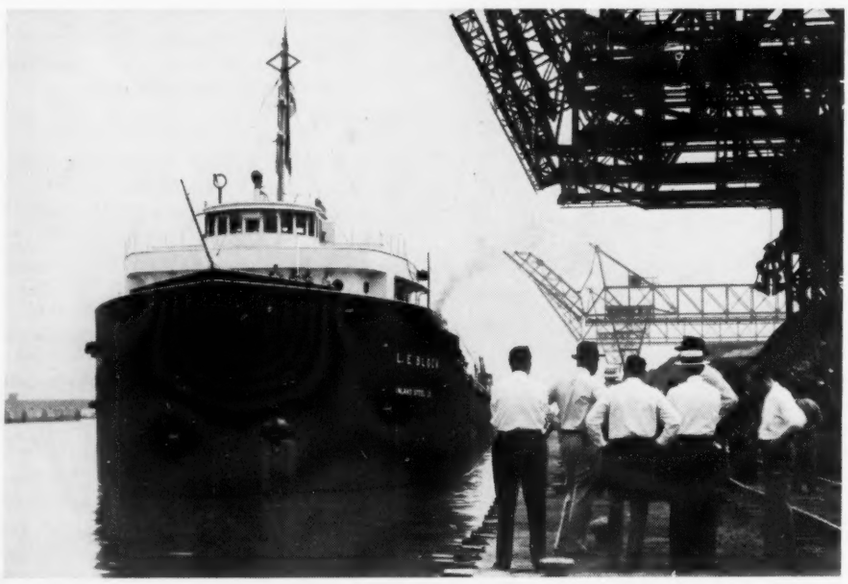
Report says sufficient experience is available to show satisfactory operation of carbide tools depends largely upon uniform cutting speeds, rigidity of work and machine, together with freedom from chatter or vibration.

Start Analysis of Gray Iron Literature

■ Study of the world's literature on the properties of gray iron has been started at Battelle Memorial institute, Columbus, O., by the Gray Iron Founders' Society Inc.

Much valuable information on engineering properties of modern gray iron can be found in scattered technical publications, but usually is not in accessible or convenient form for practical use. Battelle metallurgists will select the most useful and authoritative of the material and shape it for convenient use.

Carries 15,726 Tons Ore, Sets New Record



■ All-time ore cargo record is claimed by Inland Steel Co., Chicago, for its flagship, the L. E. BLOCK, which recently carried 15,726 tons from Marquette, Mich., to Indiana Harbor, Ind. On a previous trip the freighter had established a new record for 1938 with 15,613 tons. The L. E. BLOCK is 596 feet long, 64 feet wide, was built in 1927 at a cost of about $1,000,000

How Sales Volume Can Be Increased

■ MANY manufacturers of metal products fail to take maximum advantage of new materials, equipment and processes. As a result, their sales potentialities are not as strong as they might be.

Fully 50 per cent of the fabricated steel products in use today, it has been said, are designed incorrectly, for the reason that manufacturers have not yet adopted new developments.

Most manufacturers follow a policy of furnishing products that satisfy the customer. They make changes as the customer demands them.

This means a competitive disadvantage in most cases, because when customers demand improvements it usually is because they have been educated by more alert suppliers.

In alluding to the low-alloy, high-strength steels which in the last few years have gained such wide acceptance in the transportation field, STEEL, Aug 1, p. 15, referred to their less rapid adoption in other fields as follows:

"Industry still has a problem in selling the ultimate consumer on the durability of light-weight fabrication.

"As an example, construction contractors have been accustomed to using ponderous equipment with heavy steel sections and supporting members and are not so convinced that similar equipment of lighter construction will stand up in service."

Sales Opportunities Improved By Superior Materials

The reason construction contractors are not so convinced that light-weight equipment will stand up in service is that the fabricators of such equipment have not convinced them—for the construction contractors are not metallurgists and must depend, as most customers, on the recommendations and guarantees of their suppliers.

Recent developments in materials include stainless steels of improved workability and other desired characteristics, better steels for use in high and low temperature applications, better cast irons and cast steels, improved cutting materials, better permanent magnets, better galvanized sheets, steel of greater machineability and other improved materials.

Companies also may improve their sales potentialities by adoption of new and improved methods which permit production of better products and often at markedly lower costs. Savings made possible by new heat treating methods, for instance, are as high as 50 per cent. Great savings may be made as a result of recent developments in welding.

Product Should Do More Than Simply Satisfy Buyer

Design is another approach which the manufacturer of metal products may utilize in building sales and improving his competitive position. In STEEL, Aug. 1, a leading designer of metal products cited numerous instances where sales have been increased simply through redesigning products to make them more attractive to customers.

Under prevailing conditions it is not sufficient to make a product that will satisfy the consumer's requirements. Rather, it is necessary to supply something a little better and, if possible, at a lower price.

Those companies will do best, on the average, who study carefully all new developments in materials, equipment and methods and who take the initiative in adopting them and in educating their customers as to the merits of the improvements.

THE BUSINESS TREND

Activity Holds Well Despite Lull in Motordom

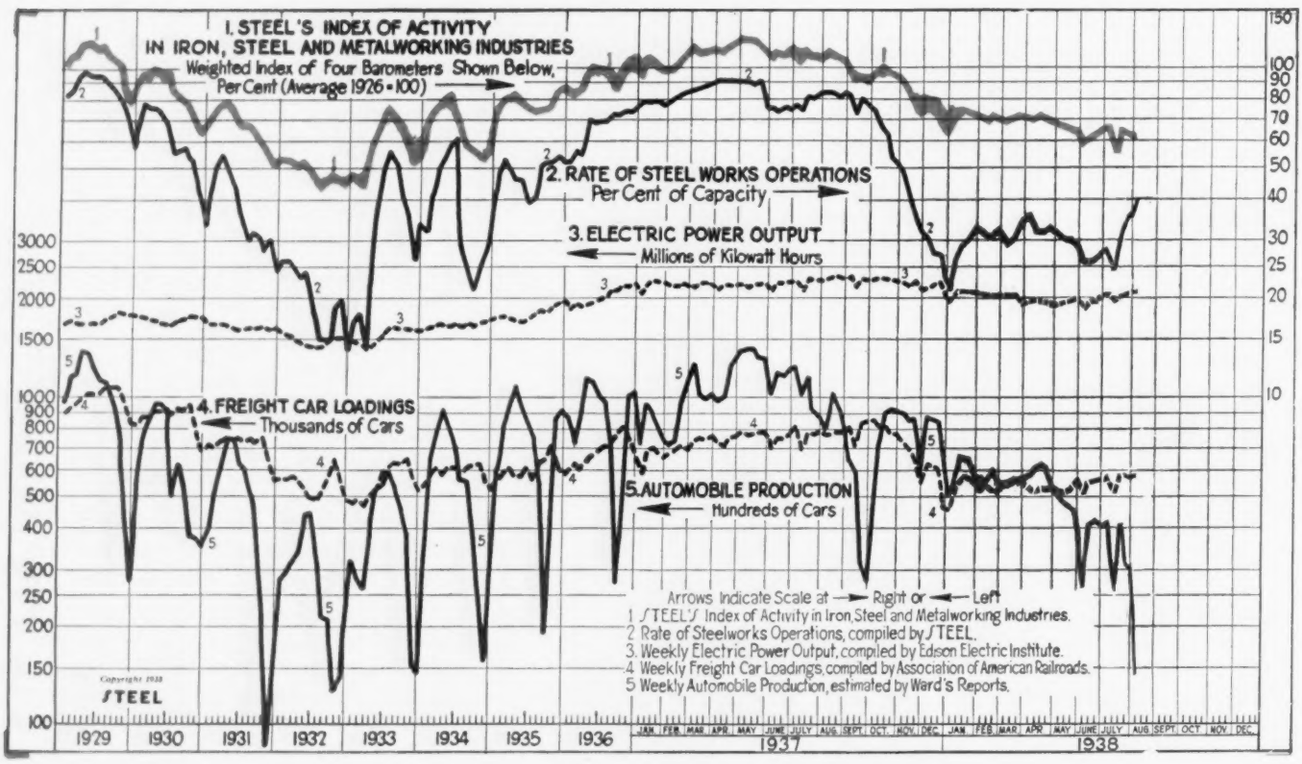
■ CONSIDERING the fact that automobile production is at low ebb during the shift from old to new models and that the peak of the vacation season is at hand, industrial activity is holding up well.

In the week ending Aug. 6, steelworks operations, revenue freight car loadings and electric power production showed gains over the preceding week. Preliminary reports on car loadings indicated only a slight increase, but the rate of ingot production advanced from 37 to 40 per cent of capacity and electric power output hurdled the 2,100,000,000 kilowatt-hour mark to establish the second highest weekly record for the year. Electric power output in the week ending Aug. 6 was the highest recorded since the week ending Jan. 8, 1938.

Meanwhile automobile production, which had been tapering off in anticipation of the annual changeover period, declined from 30,390 to 14,771 cars. The net result of the fluctuations in all four barometers was a moderate recession in STEEL's index of industrial activity from 69.0 in the week ended July 30 to 67.0 in the week ended Aug. 6.

Market reports point to a gradual, moderate uptrend in activity in the iron, steel and metalworking industries which will help to bridge the gap until parts makers, suppliers and automobile manufacturers swing into volume production for new models.

Reviving automobile activity should come to the support of industry in September. Seasonal factors also will become effective after Labor day. Early in October, the character of business improvement should indicate clearly whether the current upswing is a flash in the pan or a phase of a substantial recovery.


1. STEEL'S INDEX OF ACTIVITY IN IRON, STEEL AND METALWORKING INDUSTRIES
Weighted Index of Four Barometers Shown Below, Per Cent (Average 1926 • 100)
2. RATE OF STEEL WORKS OPERATIONS
Per Cent of Capacity
3. ELECTRIC POWER OUTPUT
Millions of Kilowatt Hours
4. FREIGHT CAR LOADINGS
Thousands of Cars
5. AUTOMOBILE PRODUCTION
Hundreds of Cars
Arrows Indicate Scale at ► Right or ◄ Left
1 STEEL'S Index of Activity in Iron, Steel and Metalworking Industries.
2 Rate of Steelworks Operations, compiled by STEEL.
3. Weekly Electric Power Output, compiled by Edison Electric Institute.
4 Weekly Freight Car Loadings, compiled by Association of American Railroads.
5 Weekly Automobile Production, estimated by Ward's Reports.
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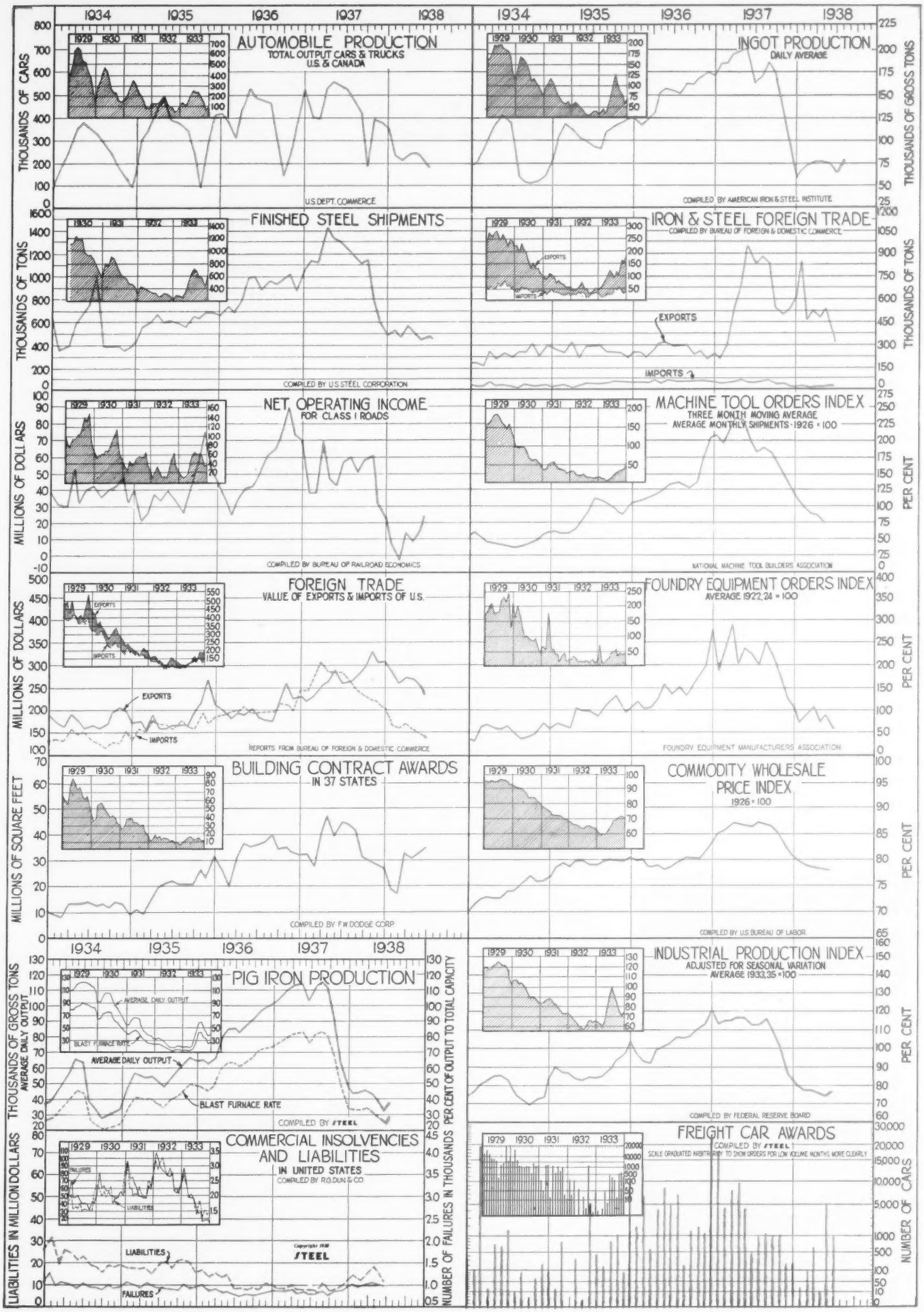
1929 1930 1931 1932 1933 1934 1935 1936
1937
1938

STEEL'S index of activity declined 2.0 points to 67.0 per cent in the week ended Aug. 6:

Week ending	STEEL'S Index of Activity Index No.		Steelworks Operating Rate Per Cent		Electric Power Output Million KWH		Freight Car Loadings		Weekly Auto Output	
	1938	1937	1938	1937	1938	1937	1938	1937	1938	1937
May 7	68.5	123.5	31.0	91.0	1,939	2,176	536,140	767,481	53,385	140,188
May 14	67.2	123.2	30.0	89.0	1,967	2,194	541,813	773,669	47,415	140,396
May 21	67.1	122.2	30.0	91.5	1,967	2,198	545,808	779,276	46,810	131,306
May 28	66.5	115.6	28.5	75.0	1,973	2,206	562,061	794,855	45,120	131,421
June 4	58.1	105.1	25.5	75.0	1,878	2,131	502,624	692,140	26,980	101,629
June 11	64.4	114.4	25.5	74.0	1,991	2,214	553,854	754,360	40,175	118,798
June 18	65.2	110.3	27.0	75.5	1,991	2,213	555,569	756,289	41,790	111,620
June 25	66.0	112.8	28.0	74.0	2,019	2,238	558,937	773,733	40,918	121,032
July 2	66.5	115.3	28.0	77.5	2,014	2,238	588,864	806,168	40,945	122,890
July 9	57.1	103.8	24.0	74.0	1,881	2,096	501,013	682,205	25,375	100,981
July 16	69.9	115.7	32.0	82.0	2,084	2,298	602,300	770,075	42,010	115,380
July 23	68.7	108.0	36.0	81.0	2,084	2,258	580,882	770,980	32,070	88,055
July 30	69.0†	109.1	37.0	84.0	2,093	2,256	588,703†	782,660	30,390	86,448
Aug. 6	67.0*	107.3	40.0	84.5	2,115	2,261	590,469*	769,706	14,771	73,736

*Preliminary. †Revised.


1934 1935 1936 1937 1938
AUTOMOBILE PRODUCTION
TOTAL OUTPUT CARS & TRUCKS U.S. & CANADA
U.S. DEPT. COMMERCE
THOUSANDS OF CARS
INGOT PRODUCTION
DAILY AVERAGE
COMPILED BY AMERICAN IRON & STEEL INSTITUTE
THOUSANDS OF GROSS TONS
FINISHED STEEL SHIPMENTS
COMPILED BY U.S. STEEL CORPORATION
THOUSANDS OF TONS
IRON & STEEL FOREIGN TRADE
COMPILED BY BUREAU OF FOREIGN & DOMESTIC COMMERCE
EXPORTS
IMPORTS
NET OPERATING INCOME
FOR CLASS I ROADS
COMPILED BY BUREAU OF RAILROAD ECONOMICS
MILLIONS OF DOLLARS
MACHINE TOOL ORDERS INDEX
THREE MONTH MOVING AVERAGE
AVERAGE MONTHLY SHIPMENTS - 1926 = 100
NATIONAL MACHINE TOOL BUILDERS ASSOCIATION
PER CENT
FOREIGN TRADE
VALUE OF EXPORTS & IMPORTS OF U.S.
REPORTS FROM BUREAU OF FOREIGN & DOMESTIC COMMERCE
FOUNDRY EQUIPMENT ORDERS INDEX
AVERAGE 1922,24 = 100
FOUNDRY EQUIPMENT MANUFACTURERS ASSOCIATION
BUILDING CONTRACT AWARDS
IN 37 STATES
COMPILED BY F.W. DODGE CORP.
MILLIONS OF SQUARE FEET
COMMODITY WHOLESALE PRICE INDEX
1926 = 100
COMPILED BY U.S. BUREAU OF LABOR
INDUSTRIAL PRODUCTION INDEX
ADJUSTED FOR SEASONAL VARIATION
AVERAGE 1933,35 = 100
COMPILED BY FEDERAL RESERVE BOARD
PIG IRON PRODUCTION
AVERAGE DAILY OUTPUT
BLAST FURNACE RATE
COMPILED BY STEEL
THOUSANDS OF GROSS TONS AVERAGE DAILY OUTPUT
PER CENT OF OUTPUT TO TOTAL CAPACITY
FREIGHT CAR AWARDS
COMPILED BY STEEL
SCALE GRADUATED ARBITRARILY TO SHOW ORDERS FOR LOW VOLUME MONTHS MORE CLEARLY
NUMBER OF CARS
COMMERCIAL INSOLVENCIES AND LIABILITIES
IN UNITED STATES
COMPILED BY R.G. DUN & CO.
LIABILITIES IN MILLION DOLLARS
NUMBER OF FAILURES IN THOUSANDS
LIABILITIES
FAILURES
Copyright 1938 STEEL

Safety Comes of Age

Increased progress in safety promotion requires freshness of approach. One company with an excellent safety record explains methods that prove effective

By W. F. AMES
Manager
Compensation & Safety
Bethlehem Steel Co.
Bethlehem, Pa.

■ NO MAJOR industry can boast of a finer achievement than steel in the showing it has made in accident prevention. In twenty-five years it has surged up in its safety rating from a position close to the bottom among the more hazardous industries to a position near the top among the safest. Accidents have been reduced 80 per cent since organized safety work was first instituted.

Essential nature of safety promotion in steel plants today is to hold gains already achieved and to make the industry still safer. This appears a less challenging assignment than was cutting down the far heavier accident toll of twenty years ago. But probably for this very reason, safety promotion tends now to be more difficult. The "dangerousness" of the steel industry no longer supplies the incentive to safety effort that it once did.

Toes of the five safety shoes shown here tell their own story. They were badly damaged—but not the feet that were inside of them

Promoting safety in the steel industry is no longer a job of tackling a new task with untried tools. It calls rather for using familiar tools in a familiar way, but using them more effectively. It requires incentive. Safety promotion has come of age.

Hence while modes of safety promotion are as fundamental as ever, their effectiveness increasingly demands a freshness of approach. The problem isn't one of adventurous pioneering into new territory. It is now one of combing over old ground again and again to eradicate still more accidents. Most of the simpler ways of preventing accidents have been thought of and applied. New approaches to old problems are essential for effectiveness in present safety work.

Education Needed

Encouraging or requiring the wearing of safe clothing, and promulgation of safety codes are standard practice. Guarding of gears and belts, safety features in plant layout and machine design are the rule rather than the exception. Work remaining to be done in safety promotion is largely safety education.

Possibly its primary function is to keep workers constantly reminded of the need for cultivating and adhering to safe working habits. Instructing them in the safe way of doing things also importantly enters into it. Seeking a new approach in safety effort is much like advertising. By fresh approaches it effectively puts to work the suggestive power of repetition.

Foremen give regular talks on safety to their men

At Bethlehem, the incorporation of the news slant in safety bulletins, letters or special messages that fit into a year-round program provides a change in emphasis for safety promotion that has proved effective as a means of keeping the safety theme vital and fresh.

Last year, for example, effort was concentrated on reducing some one or two special forms of hazards each month. Thus, in June the hazards of scaffolding erected with poor lumber and the hazard of makeshift ladders were emphasized. Concentrating on these few hazards on an organization-wide basis produced results in a number of instances which could have only been attained piecemeal, if at all, by the usual approach.

Last year's program, it will be noted from the above brief description of it, was focused mainly on unsafe equipment with inferred emphasis on unsafe practices. This year the "safety the year around" theme is carried along but the emphasis is turned around. Unsafe practices are attacked directly; un-

safe equipment, only indirectly or as it is involved in unsafe practices.

A resume of the program for the year follows: In January the emphasis was thrown on repairs on live equipment; February, neglected minor injuries; March, adequate instructions; April, carelessness and thoughtlessness; May, use of defective or worn tools or equipment; June, health; July, chance taking; August, horseplay; in September it will be "plan the job"; October, unauthorized use of equipment; November, failure to use safety equipment; December, short cuts and trespassing.

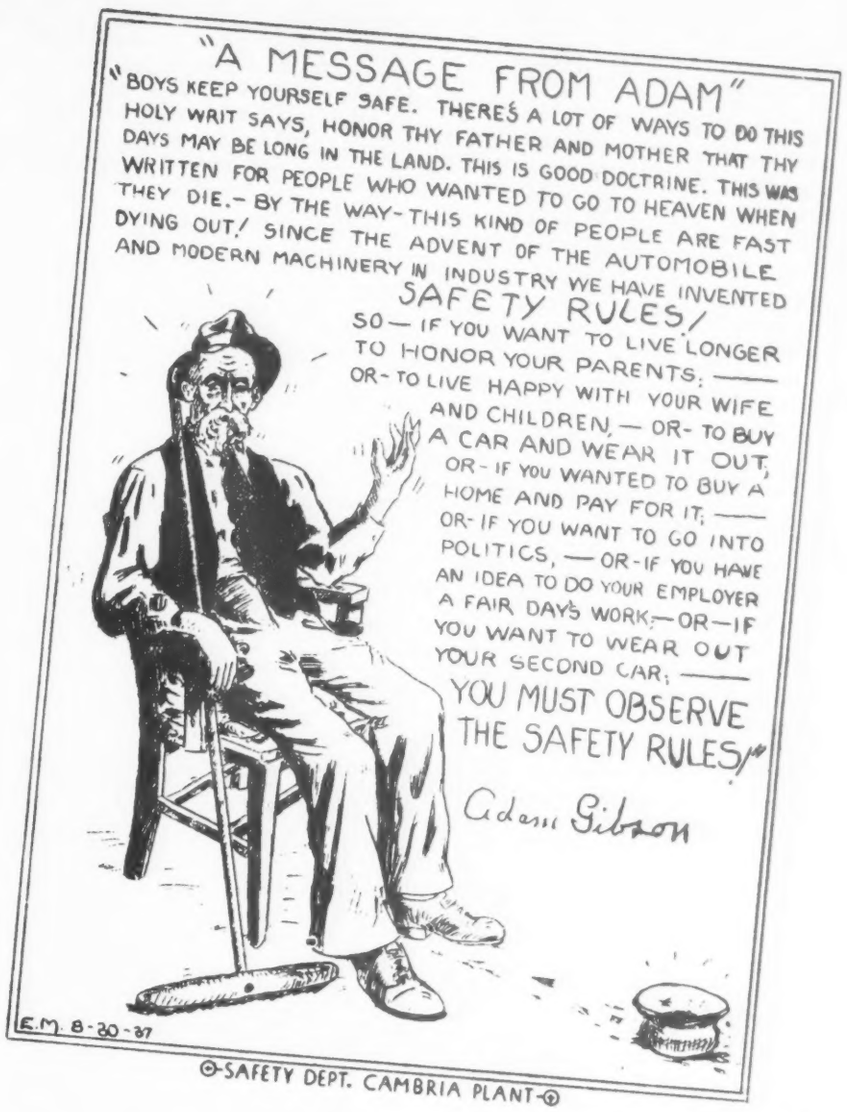
Prepares Bulletins

Safety department prepares mimeographed bulletins on these subjects and supplies them to plant safety directors both for guidance in their general programs and for distribution and posting. Each bulletin is of sufficient length to carry home the message, but short enough for presentation on one side of typewriter-size paper with plenty of space for paragraphing and a small boxed-off mimeographed illustration at the upper right-hand corner that serves as an attention getter and contains the main message in condensed form.

Any set way of promoting safety, however, has its limitations. The kind of strategy in warfare against accidents that often makes the most impressive gains is of the mobile type. Habits that breed carelessness, and indifference to the overfamiliar are enemies that rear their heads again and again. Constant variety in the methods used to bring safety to the attention of workers is therefore essential.

One way of introducing variety into the safety promotion program is by means of contests. At the company's Maryland plant, limerick contests held during the past year served to arouse interest in safety. At the Lackawanna plant, a safety poster contest served for a time to arouse interest in safety, yielding a number of posters that would have done credit to professional artists.

Signs that the departments get up themselves often have more appeal than the imported kind


"A MESSAGE FROM ADAM"
"BOYS KEEP YOURSELF SAFE. THERE'S A LOT OF WAYS TO DO THIS HOLY WRIT SAYS, HONOR THY FATHER AND MOTHER THAT THY DAYS MAY BE LONG IN THE LAND. THIS IS GOOD DOCTRINE. THIS WAS WRITTEN FOR PEOPLE WHO WANTED TO GO TO HEAVEN WHEN THEY DIE.- BY THE WAY- THIS KIND OF PEOPLE ARE FAST DYING OUT./ SINCE THE ADVENT OF THE AUTOMOBILE AND MODERN MACHINERY IN INDUSTRY WE HAVE INVENTED SAFETY RULES/
SO — IF YOU WANT TO LIVE LONGER TO HONOR YOUR PARENTS; —— OR- TO LIVE HAPPY WITH YOUR WIFE AND CHILDREN, — OR- TO BUY A CAR AND WEAR IT OUT, OR- IF YOU WANTED TO BUY A HOME AND PAY FOR IT; —— OR- IF YOU WANT TO GO INTO POLITICS, — OR- IF YOU HAVE AN IDEA TO DO YOUR EMPLOYER A FAIR DAY'S WORK; — OR — IF YOU WANT TO WEAR OUT YOUR SECOND CAR; ——
YOU MUST OBSERVE THE SAFETY RULES/"
Adam Gibson
E.M. 8-30-37
⊙-SAFETY DEPT. CAMBRIA PLANT-⊙

Bulletins tied in with the safety program make a direct attack on unsafe practices

A "white elephant" contest, an idea borrowed from the automobile industry, was resultful at the Bethlehem plant. The same white elephant (made of concrete) resplendent in a fresh coat of white paint was just as effective later on in a similar contest at the Pottstown plant. The white elephant is awarded to the department with the most accidents. Then, also, trophies and plaques have been given as rewards to departments with low accident records.

Contests Short

Generally, it is not desirable to hold contests of longer duration than a month or so, as accidents often have a way of all coming at once. When this happens early in the running of a long contest, it tends to discourage a department from making further efforts to win. Then, too, many contests make for greater novelty. At Cambria plant, an essay contest was surprisingly popular and has yielded a by-product of useful suggestions on accident prevention. Safety questionnaires requiring written answers and graded, just as examination papers might be, also have been effective here.

One of the most consistently effective methods of keeping workers reminded of safety has been liberal use of signs and posters. There have been a number of indications of the effectiveness of jumbo posters supplied by the National Safety council and placed at strategic points, such as plant entrances. Smaller posters, special messages from plant managers, as well as home-made mimeographed bulletins illustrated in many instances with drawings or diagrams, also warnings and reminders of hazards, placed on bulletin boards and around the plants are other invaluable aids.

A while ago the plant managers

were called upon for a series of weekly letters on safety. Drawing from their first-hand observations in many instances, they were able to make their points in terms that any steel worker would be likely to comprehend and appreciate at their full significance.

Aside from this persistent effort in safety education, there is a close tie-in of safety effort with production, effected quite largely by linking executive control of production with the executive control of safety. This has been most resultful. Tying in with this is Bethlehem's safety-observer plan.

Observers Appointed

Superintendents appoint from five to ten per cent of their men each month as safety observers. Since the men are selected according to plant layout as well as kind of work they do, a safety observer is likely to be close to any job. It is his duty to report any unsafe practices or conditions that he notices. But the initiative in this is not left entirely to the safety observer.

Just as soon as the superintendent appoints his safety observers, a list of them is sent to the plant safety department and a trained safety engineer is assigned to contact each of the observers frequently and regularly. He queries the safety observer concerning any unsafe conditions that have come to his attention and thus has an opportunity to check on the observer's knowledge of safety. If he finds the observer is neglectful or ignorant of the elements of safety, this routine also provides a way of reaching him with safety education.

Contacts All Workers

Since the appointments are made in rotation and a new set of safety observers serves each month, the safety department thus is afforded a way of repeatedly making a personal contact with every worker.

The safety department is linked to production also through broadly representative departmental safety committees, a plant safety committee and in the larger plants a general safety committee whose duty it is to investigate all serious accidents. Contact with operations also is maintained through frequent plant inspections.

Talks Effective

Another piece of effective machinery both for preventing accidents and as a means of safety education are informal talks on safety given by foremen and gang leaders. Talks often take the form of specific instructions relating to a given job or project.

When gang leaders lay out the work for their men they are required to outline the hazards of the job and to note whether the men are properly clothed, whether walkways are clear of obstructions, material properly piled and working conditions safe. If a job requires a hoist or a crane, the gang leader is expected to indicate of what capacity and type. On all important repair jobs, written instructions are required not only indicating the nature of the repairs to be made but the equipment to be used in making them.

Plenty of warning signs aid the cause of safety through the suggestive power of repetition

Special committees are appointed by the superintendents to study special safety problems and to enlist the interest of their members in safety. Frequently they also make useful findings. Typical problems considered might be such as the use and maintenance of chains, precautions to observe in using electrical equipment, crane operation and so on.

The management gives its men full backing in safety enforcement. Any worker who reports unsafe conditions to his immediate boss is given to understand that it is definitely his privilege and even his obligation to appeal higher up if no steps are taken to remedy these conditions. The same backing also is given to the gang leader or foreman in his dealings relating to safety with his superiors. Each foreman is held to strict accountability by the plant management for any accidents occurring in the vicinity of his department at any time.

Laying out safety aisles in Bethlehem plants help to reduce accidents, designating them with signs helps more

When gang leaders lay out work for their men, they are required to outline the hazards of the job

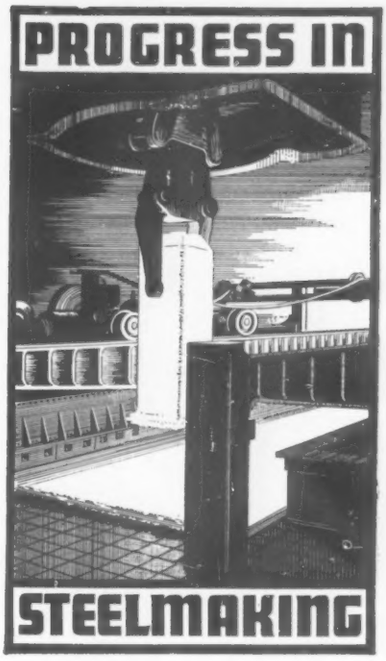
1938 Business Guide To Canadian Industry

■ *Canadian Trade Index,* 1938, cloth, 842 pages, 6½ x 10 inches; published by Canadian Manufacturers' Association, Toronto, Canada; supplied by STEEL, Cleveland, for $6; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

A comprehensive compilation of business facts, this covers the Canadian business picture completely. The association has the co-operation of its members, the government departments and commercial organizations and this volume constitutes the authoritative directory of products manufactured in Canada, with the names and addresses of firms making them.

The primary object of the publication, which is revised annually, is to provide buyers and sellers abroad and at home with a complete list of products and manufacturers. A special export section presents a survey of Canada's export trade, government services, methods, procedure, financing and statistics.

An alphabetical list of Canadian manufacturers forms the second part of the book, with branch offices, factories, export representatives, trademarks, brands and cable addresses. The third section is an alphabetical list of articles manufactured in Canada with the names of all firms manufacturing them. This is followed by a directory of producers, shippers and exporters of agricultural produce and allied lines, forwarding agents and export merchants. The fifth section is an alphabetical list in French of the headings in Part III, with parallel English.



Burden Material

Second part of this paper reveals how an excess of silica was found to cause the formation of fayalite and to prevent the economical reduction of magnetite ores

Part II

By J. T. WHITING
Vice President
Alan Wood Steel Co.
Conshohocken, Pa.

■ WE REVISED our reduction set-up built for CO gas to a set-up similar to one described by Bureau of Mines, using hydrogen gas as a reducing agent and condensed water as a measure of the oxygen reduced.

After a few experimental runs which verified the method we went further than the pallet samples we had previously prepared on our Dwight-Lloyd sintering machine. We built a laboratory sintering plant on which sinter samples could be produced under laboratory control with measured amounts of fuel, vacuum, screen size, sintering speed and temperature. This permitted production of sinters of all ranges of chemical composition and sintering practice.

One investigation used samples of ore containing 3 to 20 per cent silica. With these raw materials it was practical to make sinters of any desired silica content within these limits and with laboratory methods described by Bureau of Mines to determine relative reducibility of these sinters.

Typical reduction curves of these sinters made from our Scrub Oaks ore, with returns of the same composition and with just enough fuel to sinter, are shown in Fig. 3. Silica content ranges from 3 to 8 per cent and the iron silicate content ranges from 2.9 to 21.2 per cent.

Percentage of iron silicates increases rapidly with the increase in silica content, due to silica combining with a greater mass of iron oxide. It results in a larger volume of final silicate, in ratio of one unit of SiO_2 to 3.4 units of Fe_2SiO_4.

However, percentages of iron silicates present in the sinter were insufficient to account for the extremely detrimental effect in blast furnace, even though they reached hearth unreduced. Consequently, we felt that there were strong possibilities of additional interference with reduction of iron oxide not apparent in finely crushed samples. This necessitated knowledge of physical formation of iron silicates and their relation to rest of sinter. For this purpose we had prepared thin sections of sinter for petrographic examination. These examinations showed the iron silicates quite clearly, giving not only a close approximation of their percentage by volume but what was even more important illustrating their physical location in relation to the otherwise uncontaminated iron oxides.

Glass Present

While identification of silica compound was not too definite, presence of some small amount of labradorite (1 per cent) some hedenbergerite (3 per cent), a considerable amount of iron-contaminated glass, and a major quantity of fayalite was indicated. Total quantitative amount by volume over a number of sections of a sinter was reasonably uniform. Outside tests justified use of this method both as a quantitative measure of amount of silicate and as a method to determine

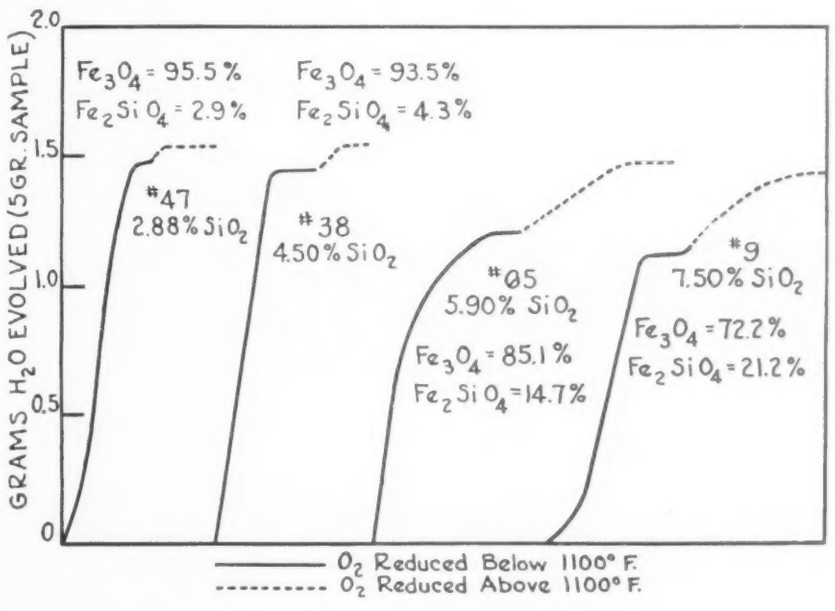


Fig. 3—Determination of ferrous silicates by hydrogen reduction method

amount of iron oxide shielded by the silicates.

Where the term "fayalite" appears here, it is used in an incorrect form as a generic term covering all the silicates present and not in its strict chemical sense.

Preparation of thin sections was extremely slow and difficult. For satisfactory control of daily production, some other reasonably accurate and much quicker method for the determination of fayalite had to be developed.

Polished surfaces of these sinters, examined unetched under ordinary metallurgical microscope by reflected light, showed two distinct constituents in addition to black cell spaces; one of white metallic luster represented roughly 7 per cent of the average field and the other, a dove-gray constituent, approximately 30 per cent. This latter constituent also appeared to be one of lower melting points, rejected to the crystal boundaries of the brighter constituent as well as to the cell walls. The fact that it was readily attacked by hydrofluoric acid suggested that this dove-gray constituent was probably the same one determined on thin sections as ferrous silicate.

Quantity Determined

Various careful checks indicated that ordinary metallurgical microscope, while unable to differentiate between components, could determine the quantity of a known component with a relatively high degree of accuracy.

Methods employed were to polish at least five samples from each sinter investigated, polishing being extremely rough. It consisted of grinding a fractured section to a flat surface and dry polishing with ordinary emery paper down through 0, 00, 000, 0000 French emery, and counting at least 10 fields from each of the five specimens, evaluating percentage of silicates in each field and then averaging these 50 fields.

One hundred and twenty experimental sinters were made, representing not only variations in silica in the mix, but variations in coal content, particle size, and preparation of concentrates. Resulting sinters were investigated for permeability, friability and microstructure.

Silicate Formed

It was found that it was impossible to produce a sinter from high-silica concentrates with a high miscroscopic permeability. Results undoubtedly were due to the fact that any ignition temperature high enough to result in formation of a fused sinter also formed a ferrous silicate which because of its much lower melting point had 400 or 500 degrees of super-heat at time of formation. Because of its highly liquid state, the fused sinter trickled down through the sinter beds until chilled by colder iron oxide below it, effectively enameling the magnetite crystals and resulting in a final sinter of low permeability, even when remelted.

Friability of these sinters also appeared to be in inverse ratio to fayalite content, unquestionably due to the same mechanics as those affecting permeability.

The most interesting relationship, however was between percentage of silica in mix and percentage of fayalite in the sinter. Results showed a far higher relationship between fayalite and silica than those published by the Bureau of Mines, and we believe do not support the bureau's conclusions that

> "It appears, therefore, that amount of silicate formed depends upon amount of fuel used and temperatures reached in sintering, as well as upon amount of silica present. If sintering mixture contains more than 10 per cent silica and a strong sinter is produced, a comparatively large percentage of iron-silicate will be formed."

Relationship of fayalite formed to percentage of silica in the mix of some of these sinters we produced is shown on Fig. 4. Only those sinters were included in which total percentage of carbon was within ½ per cent of the minimum necessary to sinter the mixture, so they do not represent over-burned sinters.

In this figure are shown the Bureau of Mines curves of their relationship of silica in the mix to iron silicates formed, the theoretical maximum fayalite, and the Alan Wood results. A line also appears which we have called the Alan Wood theoretical maximum fayalite. Our results in all cases are higher than the Bureau of Mines reported relationship.

We believe maximum silica permissible for sintering in either an ore or a concentrate is limited by entirely different practical considerations than an ore for direct smelting and that relationships other than silica must be considered.

Combines with Alumina

From theoretical heat of formation of silicates, it appears that any silica present in a concentrate will combine first with available alumina, if silica and alumina are in close contact in the gangue, forming aluminum silicate ($Al_2O_3SiO_2$) on the basis of 60 parts of silica combining with 102 parts of alumina. It also appears that silica will next combine with available lime in gangue on basis of 60 parts of silica to 168 parts of lime; and then with MnO on basis of 60 parts of silica to 71 parts of MnO. As magnesia is relatively inert, only silica in excess of that which by combining weights will unite with available lime, alumina and manganese need be considered in anticipating formation of ferrous silicates. As lime-alumina-silicates are a typical composition in blast furnace slag, we believe they can be disregarded as affecting reduction of iron oxides in furnace, and that relationship between silica and ferrous silicates may change with each type of ore or concentrate, depending upon lime, gangue as well as with the silica alumina and manganese in the content.

In Bureau of Mines investigations, multiple combining potentialities of silica were not taken into consideration and maximum fayalite was based on total silica present rather than on only that silica in excess of silica which combined with the strong bases. With relatively high lime-alumina ores studied the fayalite silica relation reported was low.

While amount of silica in an ore for direct smelting in excess of that required for a satisfactory slag vol-

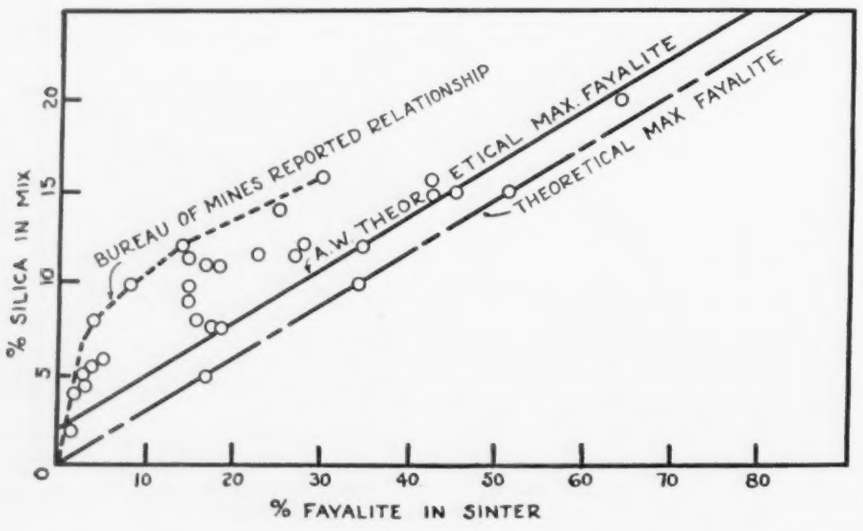
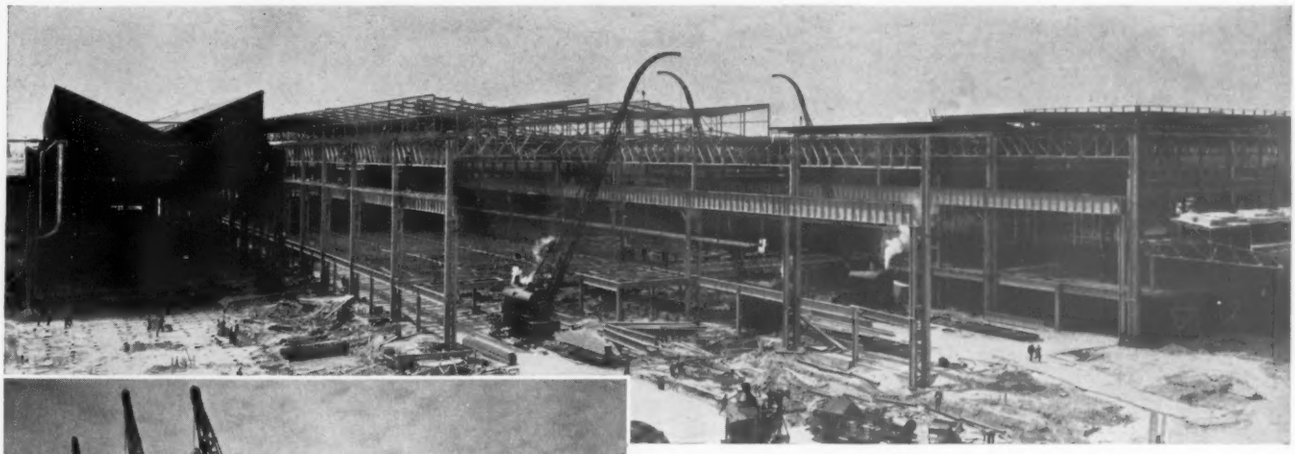
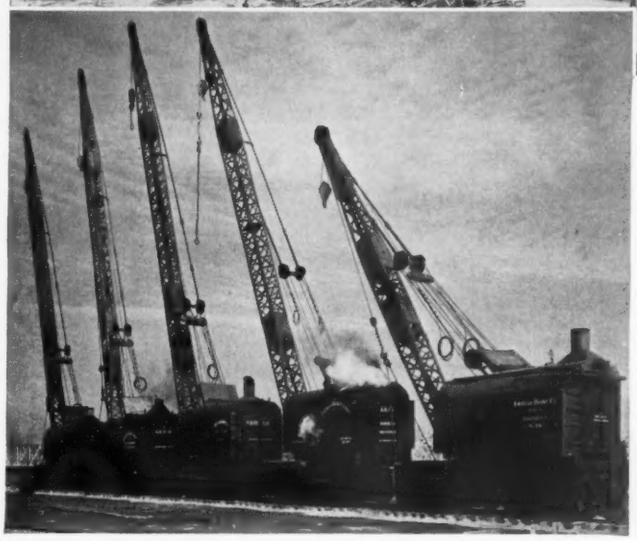


Fig. 4—Relation of silica in mix to ferrous silicates formed in sinter

MAKING TIME ON THE
World's Largest Factory Building





PROGRESS VIEW. Ford Motor Company's new Press Shop comprises 3 major units—at the left a two-aisle building 180 ft. by 292 ft.; at the center, a four-aisle building 240 ft. by 933 ft. at the extreme right, and extending at right angles from the center building, a five-aisle building 340 ft. by 1260 ft. (For the permanent foundations, Carnegie-Illinois Steel Corporation supplied some 24,600 tons of Steel H-Piles, set another world's record—the greatest lineal footage of steel bearing piles, 929,245 lineal feet, ever driven on a single industrial undertaking.)

"RARING TO GO!" A battery of five locomotive cranes, just arrived at the site and ready to set steel. Significant of American Bridge Company's erection facilities, ten locomotive cranes and one crawler crane were used in erecting this huge plant.

● *(Albert Kahn Inc., Architects and Engineers).*

Some 27,500 tons of structural steel fabricated and erected in 190 calendar-days!

WITH approximately 17 acres under roof, the Ford Motor Company's new press shop at the Rouge Plant, Dearborn, Mich., today ranks as the largest factory building in the world.

Three major structures, with minor constructions for contributory facilities, comprise an integrated shop unit engineered for maximum operating efficiency. Because of its extensive steel-framed first floor, an available operating space nearly double the ground floor extent is provided. Construction is characterized by long-span interior column bays with adequate crane service facilities throughout all first floor areas.

The rigorous demands of a 190 calendar-day schedule which governed the fabrication and erection of the huge steel tonnage involved, made the time element of vital importance. Here again American Bridge Company's trained personnel, large plant capacity and ample erecting facilities made it possible to meet the exacting requirements of the Ford project satisfactorily, and ON TIME.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Baltimore · Boston · Chicago · Cincinnati · Cleveland · Denver · Detroit
Duluth · Minneapolis · New York · Philadelphia · St. Louis

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

ume can be evaluated on basis of its relation to excess lime required to flux this silica, the extra freight involved in its transportation from mines to furnace and extra coke required for its reduction, a different system of evaluation must be employed on ores or concentrates for sintering. The evaluation should be based on effect of silica upon sinter produced.

It was our conclusion that more than 3 or 4 per cent silica in excess of amount which will combine with the strong bases will form increasingly objectionable quantities of fayalite, which in itself is difficult to reduce and which has a shielding effect upon additional iron oxide in the sinter, thereby interfering with economical reduction of entire sinter burden.

Methods Revised

With this conclusion firmly established by investigations during 1934-35, it became necessary to reduce silica content of concentrates from about 12½ per cent down to between 4 and 6 per cent. To accomplish that, a considerable revision in our methods of beneficiation was required, and flow sheets through mill were revised to permit production of concentrates of much lower total silica. This was not difficult.

With low-silica concentrate available, No. 3 furnace was put back in blast at the end of December, 1936, on a higher magnetite burden than ever before. Fig. 1 shows relationship of magnetite in burden to coke per ton during this period. Performance of furnace for 1938 is shown:

Average pounds coke per ton iron (Basic)	1,467
Average pounds flue dust per ton pig iron	85
Top heats	429
CO: CO_2 ratio	2.0

General performance of furnace was quite satisfactory.

These results show clearly the value and economic justification of the time and money spent on fundamental research into the physical and chemical properties of raw materials. They also demonstrate beyond a doubt the desirability and high value of New Jersey magnetite ores when properly prepared for blast furnace use.

In addition, they demonstrate that the ordinary metallurgical microscope can be used to determine quantities of known components with a high degree of accuracy.

Unloads Cars Faster

■ **This tractor and trailer unit helps handle incoming material at Pontiac Motors plant. Cars are unloaded under cover and material is towed from unloading platform to receiving departments on heavy skid frames as shown here**

Beryllium Copper As Spring Material

■ One of the newer alloys finding increased use in spring manufacture is beryllium copper. Having an electrical conductivity practically the same as copper itself, it recently has been studied in regard to its use in small motor commutator brush assemblies. It has been found an excellent material for this application, and a spring is now being developed to replace the familiar phosphor bronze spring so long employed for this service.

Use of beryllium copper springs will make it possible to dispense with the usual flexible copper pigtail connecting the carbon brush and cartridge cap. This is expected to make an important contribution towards lower material and assembly costs as well as decreasing maintenance and facilitating brush replacement. High electrical conductivity coupled with excellent physical properties under moderately high temperatures make this application possible.

Increased use of beryllium copper as spring material is due largely to improved heat treating methods now employed accurately to harden and temper this material. Beryllium copper springs are assuming importance on applications where high electrical conductivity or a certain amount of heat resistance are factors.

Cost of Government And Social Security

Cost of Government in the United States, 1935-1937, by Lewis H. Kimmel; cloth, 163 pages, 6 x 9 inches; published by National Industrial Conference Board, New York; supplied by STEEL, Cleveland, for $3.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S.W.1.

This is the thirteenth of a series of studies dealing with financial problems of federal, state and local governments in the United States. It provides authoritative information on tax collections, expenditures and public debt. It includes an analysis of tax burdens in relation to national income and a comparison of the tax and debt situation in this country with that in the United Kingdom, France and Germany.

All available data indicating the relative burdens of taxation imposed on various types of business enterprises in the United States are presented and analyzed. A discussion of the fiscal problems arising out of the social security act constitutes a special feature of this volume.

Steelmen Who Never Saw an *Easy-Going* Inspector

Youngstown's Alloy Steel Division was launched in the depression. All users of alloy steel had their regular sources of supply, so Youngstown had to take the tough orders--the jobs that "couldn't be done." But Youngstown's crew did them--maintained uncanny uniformity of heats--met standards of precision considered almost impossible.

They never saw an easy-going inspector.... They've been born and raised on tough jobs, and that's why their steels, in the plants of user after user, set new and unequalled records for low percentage of rejects and high percentage of salable finished products.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices - - YOUNGSTOWN, OHIO

Sheets - Plates - Pipe and Tubular Products - Conduit - Tin Plate
Bars - Rods - Wire - Nails - Unions - Tie Plates and Spikes

4-3A

ALLOY TRADE MARK YOUNGSTOWN STEEL

YOUNGSTOWN

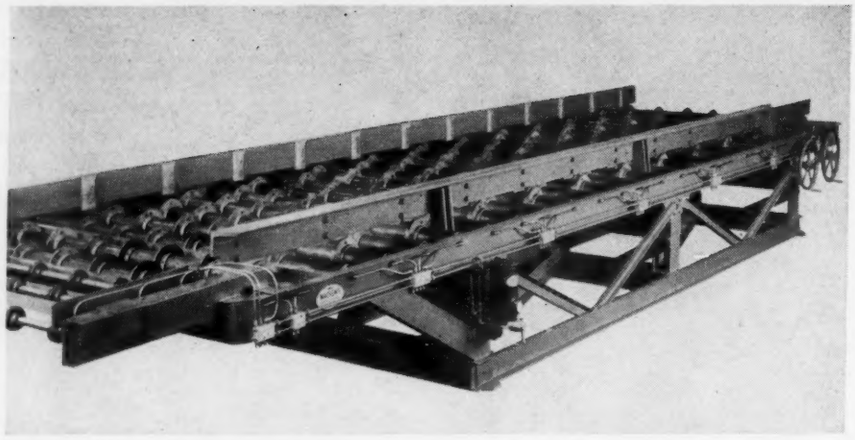
Live-Roller Table Uses Fibre Disks

■ Fiber-tired disk wheels are incorporated in a chain-driven, live-roller table, which was designed recently for installation in a steel mill. It is one of a number of mechanical handling units comprising what is known as a cold cutting-up line, used for slitting, trimming and cutting to length cold finished sheet steel.

Coils of cold-finished strip are fed from decoilers into a combination trimmer and slitter machine which trims the outer edges of the steel and also slits the strip lengthwise to predetermined widths. The live-roller disk table is located between the combination trimmer-slitting shear and the flying shear.

As the individual lengths of cold-finished sheet steel leave the flying shear they are conveyed straight ahead on a wide belt conveyor through pinch rolls and are discharged to a sheet piler consisting of a piling bar of fiber-tired wheels and a 40-foot length of heavy-duty, spring-mounted roller conveyor from which piles are removed by overhead electric crane.

This method is an example of some of the innovations incorporated in equipment for use with straight-line, continuous-flow production methods. The live-roller disk table incorporates fiber disks mounted on the driven rollers, which act as the riding surface for the cold finished steel. The surface speed of the table is variable, from 100 to 400 feet per minute. This unit is 26 feet long, nine feet wide and includes adjustable guards for directing sheet steel into processing machines. Each guard is adjustable individually. The ball-bearing rollers of the table are 4½ inches in diameter and 100 inches long. Sheet steel is handled over this system for processing in lengths from five to 20 feet, and from 20- to 74-inch widths.



This fibre tired disc table is chain driven and equipped with guards which are adjustable individually to guide sheets into processing machines. Photo courtesy Mathews Conveyer Co., Ellwood City, Pa.

New Light Source Found To Approach Sunlight

■ Researchers at Westinghouse Electric & Mfg. Co.'s lighting division laboratories at Bloomfield, N. J., have been working with liquid tellurium in an inverted U-shaped bulb equipped with a reservoir containing neon gas used to start the lamp at low temperatures. As the temperature moves upward, the characteristic red neon glow changes to blue-white, followed by a golden yellow as the hot tellurium vapor gives off a continuous spectrum like that of a hot solid. Light is nearly pure white like sunlight at one stage which suggest possibility of duplicating sunlight with this source of illumination. This light source operates at high efficiency also, it was found.

Blast Furnace Blower Has Wide Range in Capacity

■ Several unusual features were incorporated in a centrifugal, blast furnace blower recently installed by the Freyn Engineering Co., Chicago, to serve a 500-ton furnace. Built by Allis-Chalmers Mfg. Co., Milwaukee, the blower is rated 40,000 cubic feet per minute at 30 pounds gravity and is directly driven by a 3630-revolutions per minute, standard, condensing reaction, steam turbine of 4600 horsepower.

It is equipped with hand-operated movable diffusers which consist of a system of movable blades arranged in the diffuser passages surrounding the impeller wheels. Each blade is mounted on a pivot and all the blades are connected together so they can be moved simultaneously by an outside handwheel. This scheme makes it possible to reduce the volume of the blower to 14 per cent of maximum, without "pumping" or "surging," an important consideration in blast furnace operation where wide ranges in volume are essential.

Another feature is the use of a new type of volume control which is provided with automatic compensation for changes in barometric pressure and temperature. It is also arranged so that this compensation can be made manually when necessary. With this control, the speed of the blower is varied automatically to deliver a constant standard volume of air. The new blower will be installed at the plant of the Hamilton Coke & Iron division of the American Rolling Mill Co., Hamilton, O.

Hand-operated movable diffusers on this blast furnace blower make possible a decrease in capacity to 14 per cent maximum

"WHAT?—STOP WATCH CONTROL FOR CHILLED IRON ROLLS?"

"How does that give Greater Tonnage per Roll?"

For rolls with uniform wearing and good finishing qualities, the grain size of the metal must be right. To a large extent, grain size depends on the "freezing" and cooling speeds of the molten iron and its silicon carbon content.

At Birdsboro, each heat is sampled and "freezing" speed checked to the split second with a stop watch. Then each sample is chemically analyzed and depth of chill is determined on a test block. Dependent on these three precise tests and the size and composition of the desired roll, pouring temperatures and times are accurately set. Actual pouring temperatures are double checked with an optical pyrometer.

On pouring, the metal in contact with the chills quickly freezes, producing a hardened surface. The rolls are cooled slowly and evenly to relieve the internal stresses. In the larger roll sizes, furnaces are used for controlled cooling. Right down the line, Birdsboro's Chief Metallurgist personally supervises every operation.

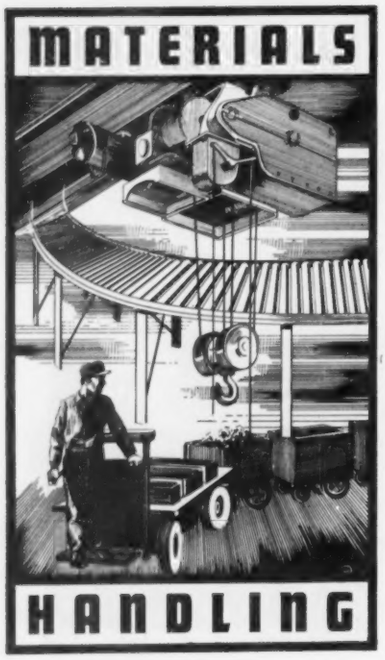
Such exacting control means longer life and better finishes in Birdsboro Rolls. In addition, Birdsboro offers competent engineering service and complete roll making facilities. That's why it's easier all around to specify "Birdsboro Rolls".

STEEL CASTINGS • STEEL MILL EQUIPMENT • HYDRAULIC MACHINERY • SPECIAL MACHINERY • CRUSHING MACHINERY • STEEL AND CHILL ROLLS

BIRDSBORO

STEEL FOUNDRY AND MACHINE COMPANY

PLANTS AT BIRDSBORO AND READING, PENNSYLVANIA



Continuous Strip Mill

Many tractor and trailer units, sheet grabs and ram trucks feature new mill. Special setup in battery recharging room permits changing batteries in three minutes

Part II

■ AFTER SHEETS from the normalizing furnaces have cooled, pickling crates of special design with trailers and tractors haul them to pickling department. A heavy cast frame of acid-resisting metal, 37¾ inches wide and 129½ inches long, is the base of the pickling crate. Holes are provided at regular intervals in the frame to take the stakes which keep the sheets separated during the pickling process.

Ten 10-ton fifth-wheel type trailer trucks, 45 inches wide and 84 inches long, are used to handle the pickling crates. For hauling these and other trailer trucks, three heavy tractors with 6-cylinder gasoline motors are used. Tractors have self starters, generators, batteries, electric horn, heavy duty bumpers and non-skid solid tires. In addition to these, this plant employs fifteen 10-ton fifth-wheel type trailers, 40 inches wide and 120 inches long, and twenty-six 10-ton fifth-wheel type trailers, 36 inches wide and 108 inches long with steel plate decks and solid rubber tires.

After pickling, sheets are left in pickling crates and are loaded on trailers for delivery to sheet scrubber and dryer located nearby. From here they are transported by crane to skin pass or temper mill and roller leveler, after which they may be re-squared, oiled or cut to smaller sizes. Cut sheets pass from a gager table to a piler unit. From here they are transported by one of the cranes to the hot mill shipping department.

Fig. 6—Special crates hold sheets during pickling. After pickling, sheets go to scrubber on 10-ton trailers as shown here

Wrapped By Hand

Materials handling facilities in the customer's plant must be taken into consideration in preparation of outgoing products for shipment. It is essential that the size and type of lift most convenient for unloading at the other end of the journey be kept in mind. Sheets are wrapped by hand in tough waterproof paper and strapped with steel bands or wire with a banding tool as shown in Fig. 7.

Coil handling likewise calls for different facilities. Under main runout table at a point 370 feet from last finishing stand of hot mill is

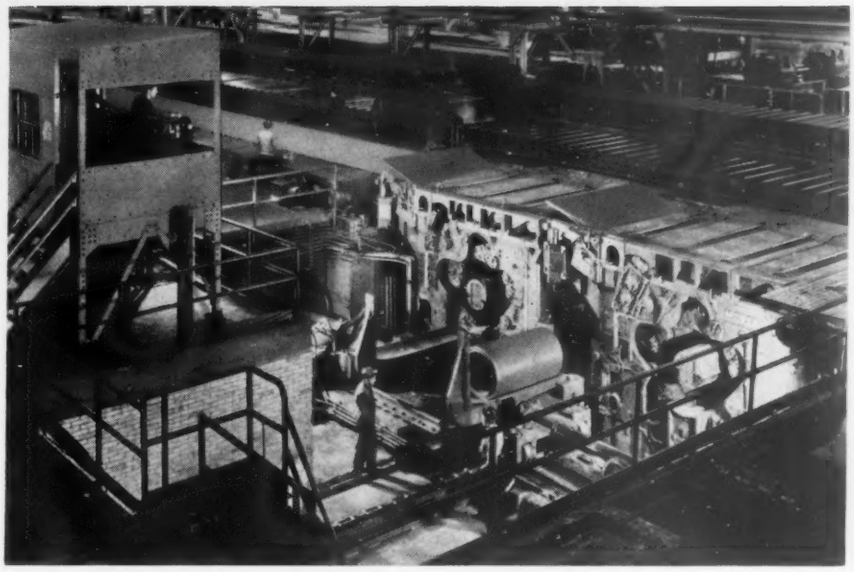


Fig. 8—Coils pass from coiler to cradle, are placed on endless chain conveyor going underground to coil storage

a coiling pit where two coilers, fed through lifting doors in the tables, wind strip on a spindle. Coil thus formed is ejected on a cradle and upended on an endless chain conveyor where it is tied with stay wire and carried for a distance of approximately 110 feet under the floor to a 90-degree motor-driven roller bend which transports it around a corner at the entrance of the coil storage building.

Then coil is carried by another chain conveyor up a gradual incline of seven degrees to a roller table equipped with a scale for weighing and space for marking. Coils weigh from 2000 to 10,000 pounds. Extending from the scale is a gravity roller table with automatic stops down which the coil travels after being weighed and marked. From the table it is picked up by a 65-inch magnet of 18,000 pounds capacity using one of two 15-ton overhead electric cranes which stack the coil for cooling.

After cooling, most of these coils are picked up again by the crane and delivered to roller tables which carry coils to adjacent continuous pickling building. Some, however, are transported to the 55-inch skin pass mill in the hot finishing department. The roller table carrying the coils into pickling building delivers them on end to a device which turns them to a horizontal position for feeding into one of two continuous picklers.

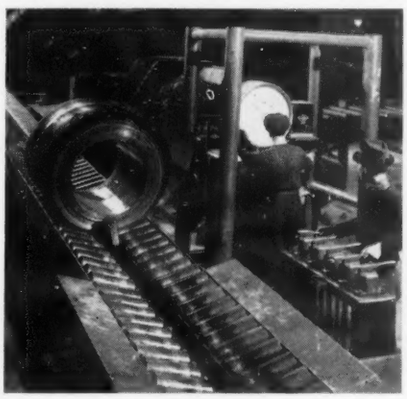


Fig. 9—From continuous picklers, strip is recoiled, placed on trough conveyor, taken to scale and delivered to low platform where ram trucks pick it up

Conveyed to Scale

As the coil emerges from the pickler, it is dried, oiled, recoiled and placed on a V-trough gravity roller conveyor 72 feet 10 inches long which transports it to the scale. Here it is weighed again to determine loss during pickling. This gravity conveyor delivers to a low platform where ram trucks enter the operation.

These ram trucks serve as delivery units for transporting coils to the cold mill. From the latter the coils may be stacked temporarily or delivered to the cut-up units, to annealing ovens or directly to the loading dock.

In this department, packs of cut sheets are handled by a 10-ton carrier and tiering machine in addition to the cranes and grabs. The carrier, powered by a gasoline engine, is capable of handling sheets from 12 inches to 72 inches wide with a maximum length of 10 feet and a bundle height of 55 inches.

This carrier is built up on four legs which support the frame, motor and operator. From the frame is suspended a sheet lifting device. Machine is operated by driving it over a stack of sheets and lowering the grab to engage the pack as shown in Fig. 10. Carrier then moves to any location and deposits the load in stacks up to six feet high.

Coils from the cold mills are ejected from the spindles into a concrete trough deepening toward the far end so coils roll to deep end. Here they are in position for quick pick-up by the ram trucks which deliver them to temporary storage space or to other processing units. These trucks can tier coils two-high, saving considerable floor space.

Ram trucks also are essential

Fig. 7—Before shipment, sheets are wrapped and strapped

units in taking coils to the shipping departments. They run their loads directly into freight cars, turn to right or left inside the cars and spot the loads exactly where they may be required for proper stowing.

Maintenance department of mill has charge of ram trucks, carriers, tractors and trailers. Electrical and mechanical divisions of that department divide the repair and maintenance work as necessary.

(Please turn to Page 73)

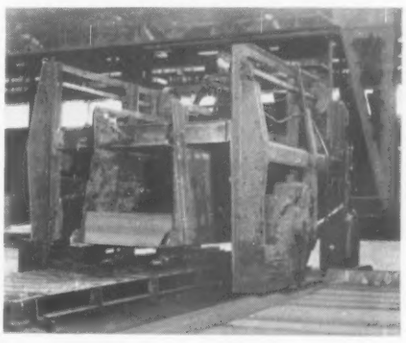
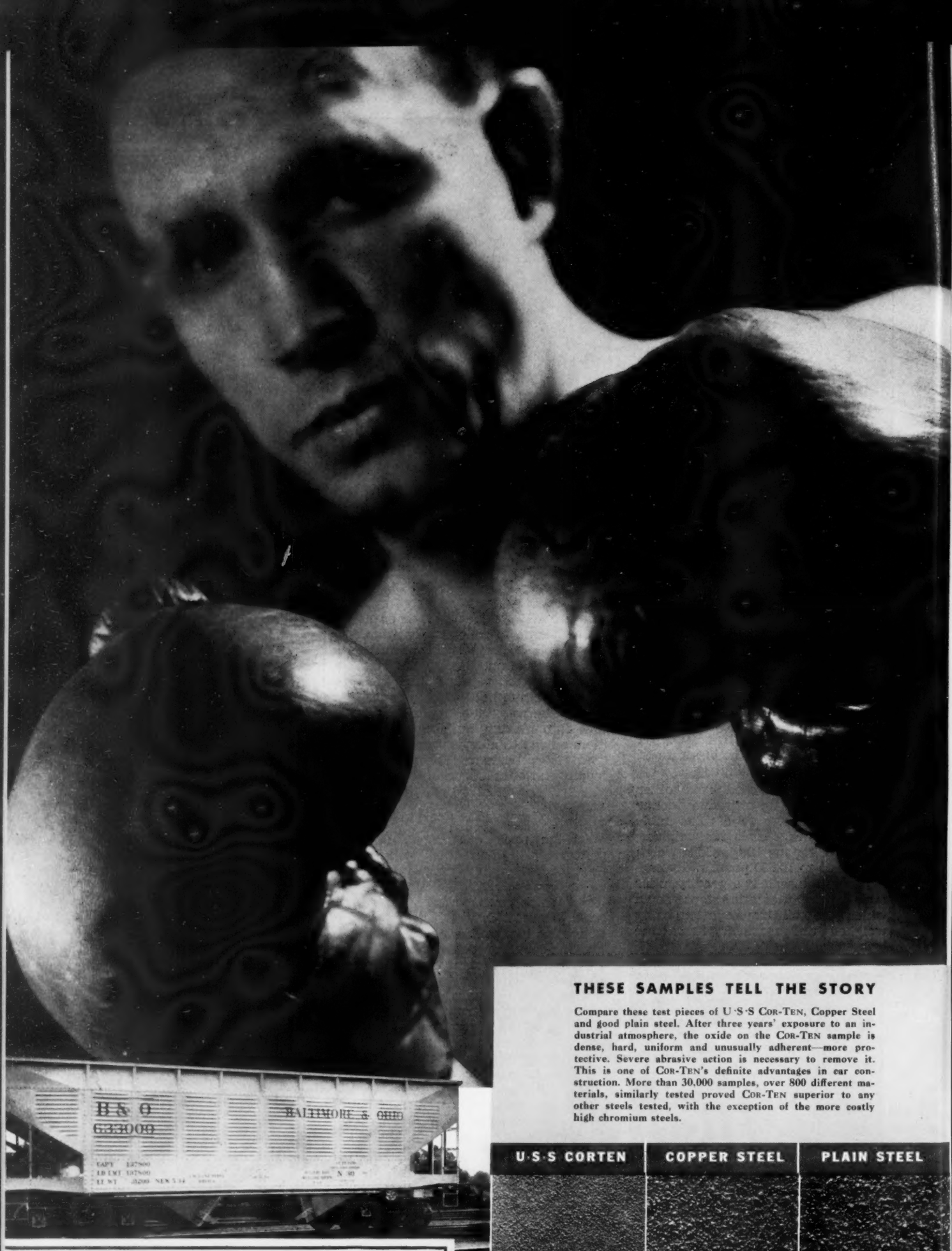
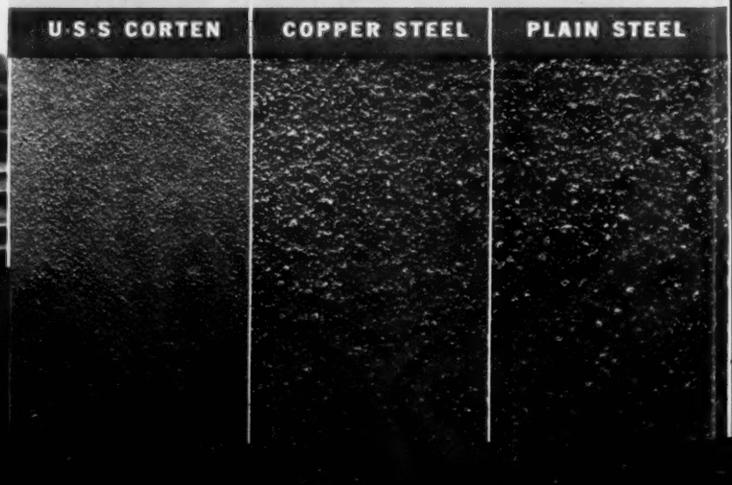


Fig. 10—Special 10-ton carrier and tiering machine straddles packs. Handles sheets from 12 to 72 inches wide with maximum length of 10 feet and bundle height of 55 inches



THESE SAMPLES TELL THE STORY

Compare these test pieces of U·S·S COR-TEN, Copper Steel and good plain steel. After three years' exposure to an industrial atmosphere, the oxide on the COR-TEN sample is dense, hard, uniform and unusually adherent—more protective. Severe abrasive action is necessary to remove it. This is one of COR-TEN's definite advantages in car construction. More than 30,000 samples, over 800 different materials, similarly tested proved COR-TEN superior to any other steels tested, with the exception of the more costly high chromium steels.



FIRST FREIGHT CAR BUILT OF COR-TEN

This car with a load limit of 137,800 lb. and light weight of 31,200 lb. has a ratio of revenue load to gross load of 81½%. Today 16,788 lightweight COR-TEN-built freight cars on 27 railroads are reducing hauling and maintenance costs an average of $72 per car per year. And today COR-TEN construction, figured on the cost per ton of capacity, often actually costs less than copper steel equipment.

A TWO-FISTED STEEL

COR-TEN

FIGHTS BOTH DEAD WEIGHT AND CORROSION . . . .

COR-TEN packs a double wallop. Not only does it have a yield point nearly twice that of mild steel but in addition COR-TEN *has from 4 to 6 times the resistance to atmospheric corrosion.*

This high strength makes it possible to use COR-TEN in thinner sections and to reduce weight 30% and more, without any reduction whatever in strength or stamina. The superior corrosion resistance of COR-TEN insures that these lighter sections will not rust out prematurely but will last just as long in service, will require no more maintenance than the old-fashioned heavy construction they replace.

COR-TEN's ability to fight atmospheric corrosion is of vital importance. That is why we emphasize it.

Past experience has proved that much of the deterioration of mobile equipment, especially of excavating and material handling machinery—trucks, tractors ,trailers and open-top freight cars—is due to atmospheric corrosion. Without high resistance to this corrosive influence, no steel, however strong, is safe or practical for building such equipment light. Steel for this service needs more than strength to meet the test of time . . . it needs the high resistance to corrosion that sets COR-TEN apart.

If you want to reduce weight more efficiently with least change in shop methods and at lowest cost—send us your equipment designs. We will gladly show you how little it will cost to build with COR-TEN and where and how to use it to best advantage.

U·S·S HIGH TENSILE STEELS

AMERICAN STEEL & WIRE COMPANY, *Cleveland, Chicago and New York*
CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
NATIONAL TUBE COMPANY, *Pittsburgh*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*

Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL

Development of Malleable Iron Wheels Was Rapid

■ A HIGH percentage of the millions of heavy duty truck and truck trailer wheels rolling across the nation's highways today are malleable iron castings.

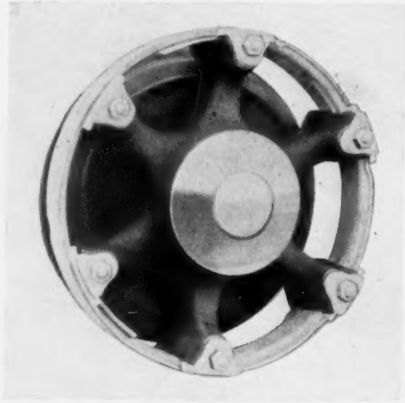
Behind this fact lies the story of the rapid development of the truck wheel industry and the progress from the cumbersome, heavy, solid tire wheels of earlier days to the modern, streamlined, lightweight wheel of today. Malleable foundry engineers have contributed much to wheel progress and improvement.

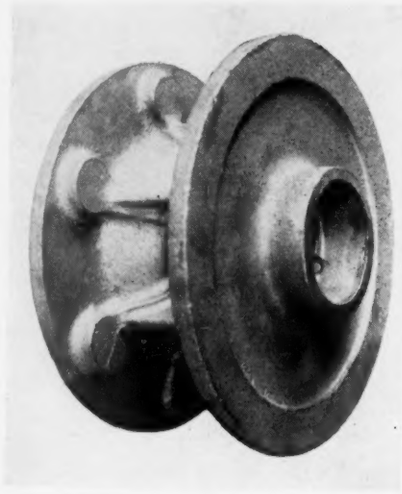
From the manufacturing viewpoint, malleable iron permitted rapid mass production, possessed the ability to cast smooth, thin, true-to-pattern surfaces, without sacrifice of strength, and the machineability necessary for the high-speed, close tolerance machining operations. The ability to cast malleable iron in thin, strong sections results in substantial weight savings. In addition to the inherent smoothness of a malleable casting, an especially good parting line is given to the wheel, due to the light fin on the casting.

Cast in Sections

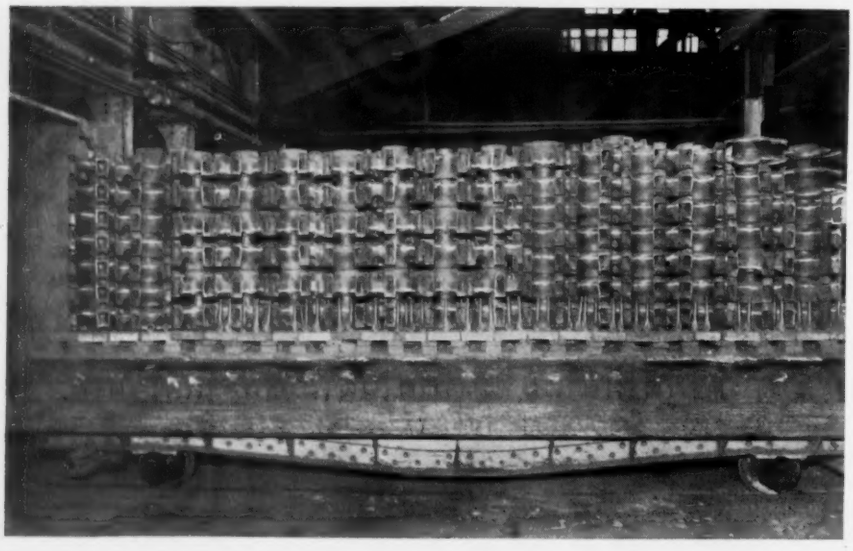
The first malleable iron wheels were cast as single units, but the size and design required for the solid tire type then in use led to several production difficulties. As a result, wheels came to be cast in four sections which were then riveted together. This step resulted in a less expensive product and this type wheel was used successfully until the sudden transition in 1920 to pneumatic tires. Wheels then became smaller and were redesigned to accommodate demountable rims.

Five years later, the demand for dual pneumatics on heavy-duty trucks led to further changes and improvements. Brake drums became larger, wheel and tire sizes smaller. Wheel foundries were faced with the problem of casting intricate designs with thin walls without sacrificing the reputation for strength and neat appearance their product had attained. This involved improvement in all production equipment. Better pattern and molding facilities were found to be required and were adopted. Improvements in annealing equipment permitting shorter cycles and more rapid delivery periods then followed.





Top, finished malleable truck wheel with rim and brake drum attached. Just below this is shown a dual wheel truck hub, also of malleable iron. Bottom, a carload of malleable truck wheels going into annealing oven



Test Shows Elastic Behavior in Soft Metals

■ An apparatus for examining the elastic behavior of soft metals, such as tin and its alloy, under necessarily small stresses applied to them was recently invented by J. W. Cuthbertson, M.Sc., and is described in technical publication series A, No. 60 of the International Tin Research and Development council.

Using the principle of the interferometer, high sensitivity and accuracy are assured when carrying out tests on specimens subjected to pure bending without in any way interfering with their free movement.

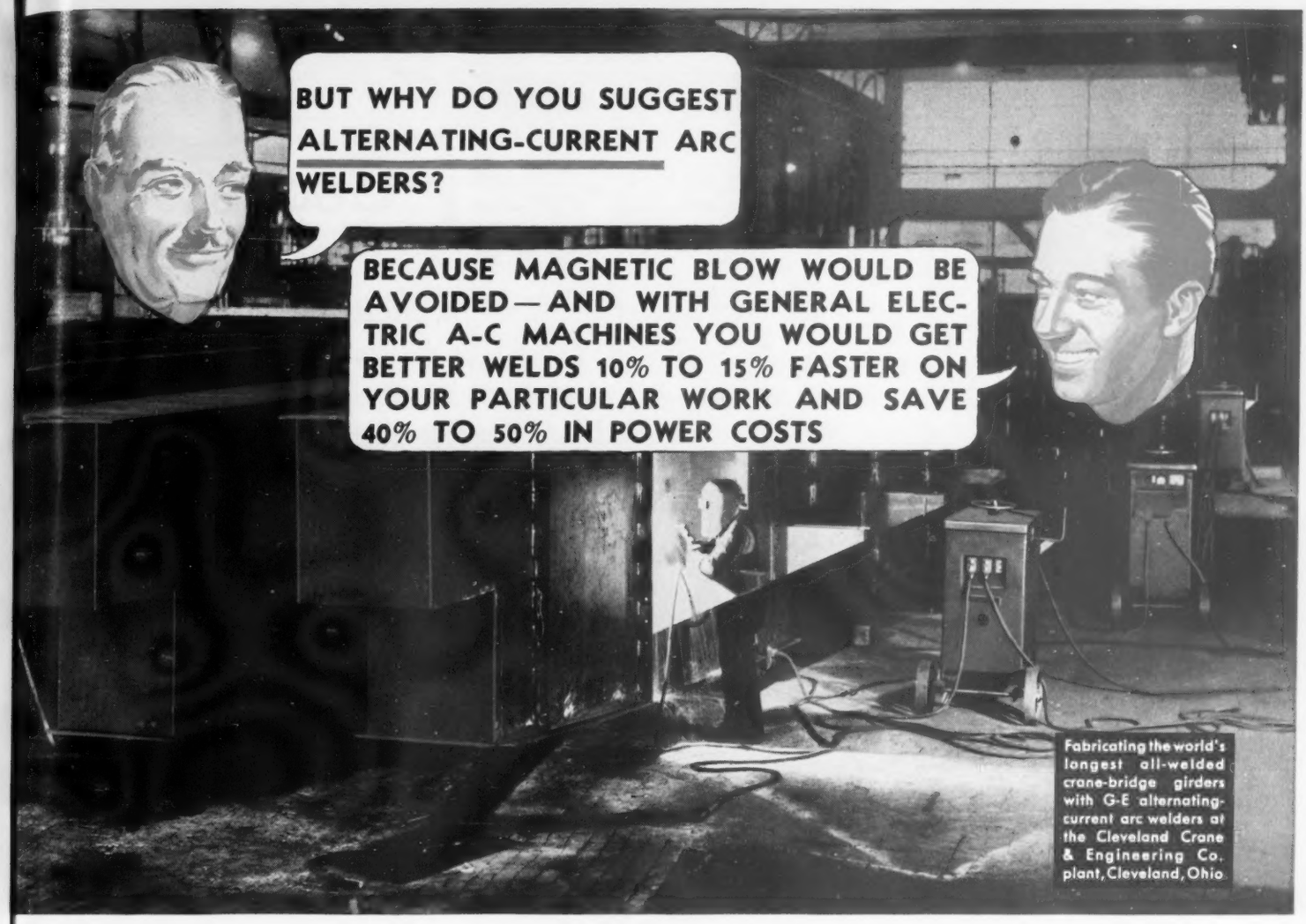
Copies of the publication may be obtained from International Tin Research and Development council, L. J. Tavener, 149 Broadway, New York.

Compound Resists Solvents

■ A tubing material which is inert to gasoline, oils and organic solvents, and which retains its flexibility throughout a wide temperature range is being produced by Resistoflex Corp., 370 Lexington avenue, New York.

This material, called resistoflex, is a synthetic resin, basically polyvinyl alcohol, which is light, tough, elastic and so flexible it literally may be tied in knots. Tubing of this material has been used successfully abroad in many industrial applications: chiefly in fuel and brake lines and lubrication systems of automotive equipment, diesel engines and aircraft; in conveying solvents and mineral and vegetable oils in chemical and process industries; in hydraulic lines; and in fuel and oil handling equipment.

Tubing is offered in diameters up to and including ½-inch inside diameter, although material will be used in the future to form gaskets, washers, packing and sheets.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G-E alternating-current arc welders are available in sizes of 150, 300, 500, 750, and 1000 amperes. All are built with the care and workmanship that have characterized G-E transformers for more than 40 years

THE world's longest all-welded crane bridge was recently fabricated by the Cleveland Crane & Engineering Co. with General Electric a-c arc welders. Says Mr. W. G. Wehr of that company:

"We use General Electric a-c arc welders because overhead welds as well as vertical and horizontal welds can be made with ease, even in corners and tight spots. The arc is steady and not subject to magnetic blow.

"This advantage is of great importance on such work as building the girders, end trucks, trolleys, and other parts of an all-welded crane, where there are a vast number of corners and close points in which to work. We get greater speed."

Take a tip from this user. If your production work involves shop welding of mild steel, it will pay you to consider General Electric a-c machines.

Call the nearest G-E arc-welding distributor or sales office to help you decide whether you have a profitable application for a-c welding. Or send the coupon to General Electric, Schenectady, N.Y.

To give you the right welding equipment, General Electric manufactures the most complete line of arc welders in the world.

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☐ Can I use a-c welders to advantage in my work? (Attach description of work.)

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GENERAL ELECTRIC

Heavy-Duty Gears

Unusual gear design, made possible by use of welding, produces gears in a wide variety of sizes to easily withstand extreme service conditions. Torch cutting also used

■ IN THE MANUFACTURE of cranes, Cleveland Crane & Engineering Co., Wickliffe, O., found it necessary to develop a method of producing heavy duty gears in a wide range of sizes.

While ordinarily gears would be produced from castings of the required material, this method of manufacture was not so suitable to these applications becaue of the wide range of sizes involved. Also the extremely severe service conditions encountered made it desirable to have the teeth made of high carbon steel. These gears are used on the bridge drives as shown in Fig. 2 to move cranes up and down the craneways. In addition, they are used on the hoist drives. In such service, it is necessary that dependability be the prime requisite as failure of a gear would disable the unit and continued crane service is of utmost importance, especially in steel and metal working plants where many of these cranes are used.

Also gears are made for use in heavy duty bending brakes. These, especially, must be of heavy duty design as peak loads on these machines are tremendous. In fact, these press brakes are tested during manufacture by purposely jamming them to cause the drive to come to a complete stop, producing an extreme loading condition on all parts including the gear teeth transmitting power to the ram.

New Method Devised

Accordingly, a rather unusual method of gear making was worked out. The hub is cut from a piece of thick-walled steel tubing of the required size. This is low carbon steel and so is not expensive. As only a few shaft sizes are involved, not a large stock of tubing is necessary to accommodate all the various sizes of gears made.

Body of gear is flame cut with the oxyacetylene torch from rolled steel plate of low carbon analysis.

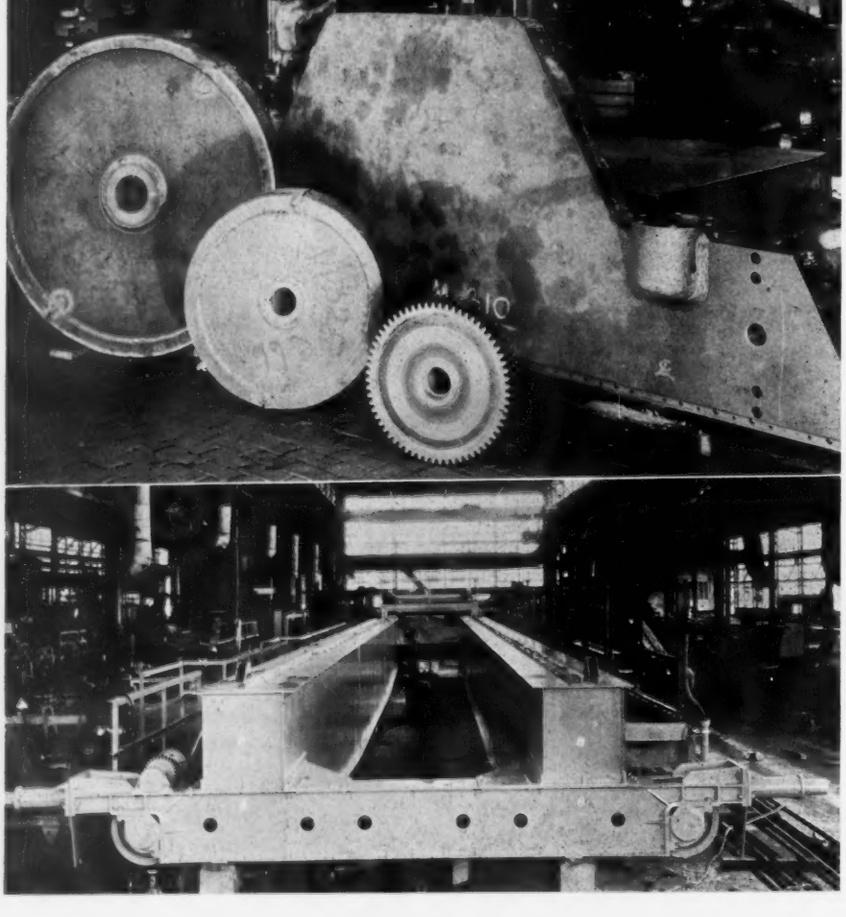


Fig. 1—(Top)—Typical gears made by method described here. Fig. 2—(Bottom)—These gears are used to drive huge crane bridges, trolley drums and winding mechanisms such as those shown here

Pinions also are flame cut from rolled steel plate. Fig. 3 shows cutting a pinion blank with the automatic flame-cutting equipment in operation in the fabricating department. This machine cuts a wide variety of shapes automatically including circles for these gear blanks. Body of gear is welded to the hubs previously cut. Hubs extend through body of gear to permit a fillet weld in the corners so formed.

Plate Forms Rims

Rims of these gears are made from high carbon steel, about 0.50 per cent carbon. This material is purchased in flat plate in several sizes from 1 to 2 inches in thickness to accommodate various tooth and rim depths. These plates are flame cut on the automatic equipment shown in Fig. 4. Here a rather unique system is utilized to prevent excessive heating of the material during the cutting operation. As seen in this illustration, there is mounted around the torch tip a copper tube with small openings in its lower side. Water is forced into this tube and emerges as fine spray completely encircling the torch tip and exerting the desired cooling action upon the material adjacent to the cutting flame.

This system has been found valuable in retaining original grain structure near the cut edge, thus reducing amount of metal which must be machined off to reach unaffected material.

Strips Forged

After two high-carbon steel strips have been cut of a size to provide the required gear tooth width and each of sufficient length to reach halfway around the gear wheel, they go to the forge shop where they are forged into the semicircular shape required to fit the gear wheel.

Sections now are tack welded to the gear wheel and then the welds completed. Ends of rim where they butt together are welded from the inside out as much as possible. A deep vee is cut in the part of these joints toward the hub, this then being carefully filled in with weld metal. Position of these two rim joints is designed to come at the bottom of the space between two teeth so all teeth are of high carbon steel with no weld metal to cause differences in rate of wear. Several passes are made in welding the rims to the wheel using the shielded metallic arc, manually operated.

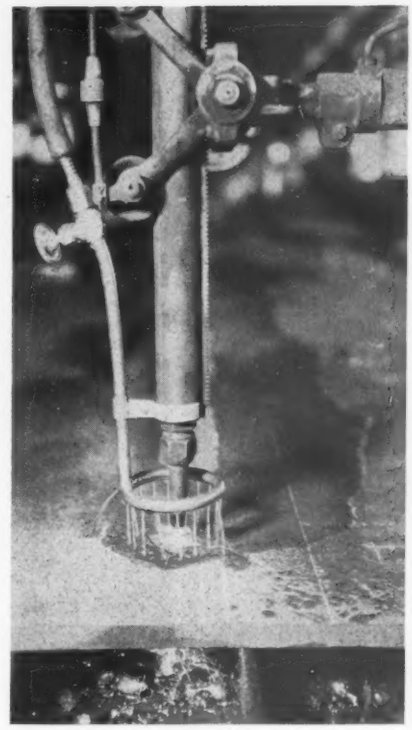


Fig. 4—Unique water cooling system utilized with torch in cutting high-carbon steel

After welding, gears are rough and finish machined and placed in gear generators where the teeth are cut. Subsequently, those gears requiring heat treatment are sent to the heat treating department, after which they are ready for service. This system of gear manufacture is extremely flexible. Gears with large holes in them for mounting on hoist drums are easily made by the procedure outlined above. Similarly gears for a wide variety of other heavy duty applications can be constructed to suit exactly the requirements of the service encountered.

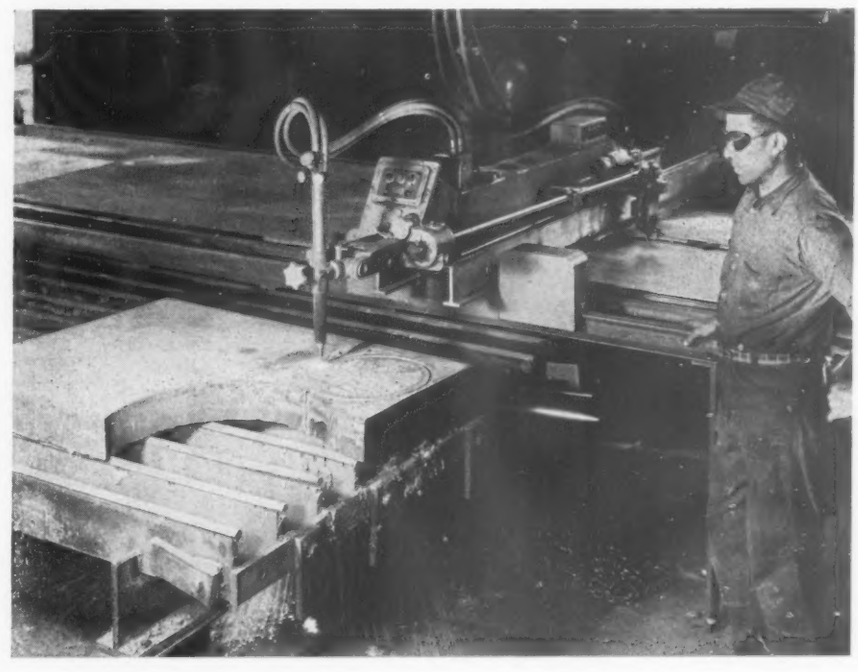


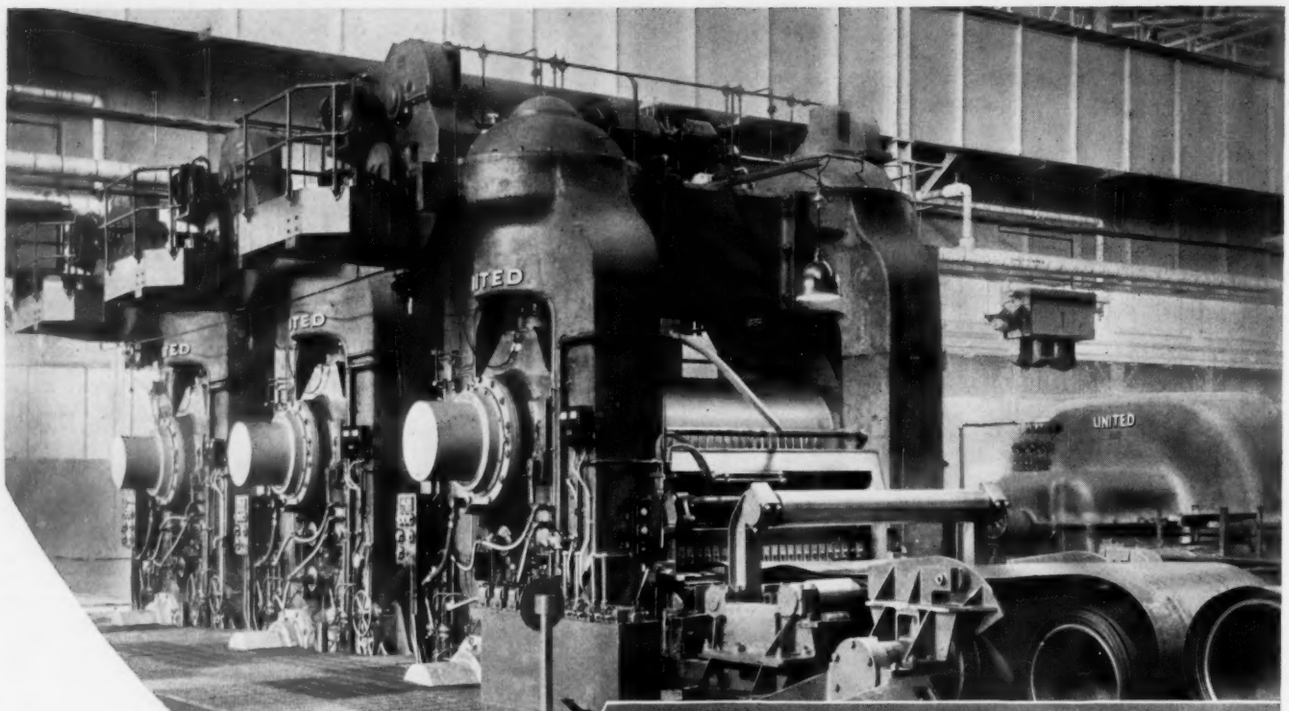
Fig. 3—Automatic torch-cutting machine in operation cutting gear blanks

Story of Steel Told For Everyman's Reading

■ *The Structure of Steel*, by E. N. Simons and H. Gregory; cloth, 115 pages, 5 x 7 inches; published by Prentice-Hall Inc., New York; supplied by STEEL, Cleveland, for $2; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

The whole story of steel is told in this small volume, in language that can be understood by anyone, however slight his technical knowledge. The idea of the volume was born from editing a technical journal on steel and engineering. The author noticed that steel experts and metallurgists have the idea that what is common knowledge to them is common knowledge in the abstruct, an assumption clearly untrue. He also noted that people who buy, sell, manipulate and otherwise have to do with steel, desire an insight into steel and its structure but find it difficult to obtain.

Much of the literature on steel is written by experts for experts and is difficult for the layman to grasp or is written by professors for students. As a result, the author attempted a series on steel in his publication. Its success led him to produce this volume in which he was assisted by a metallurgist who steered him away from pitfalls.



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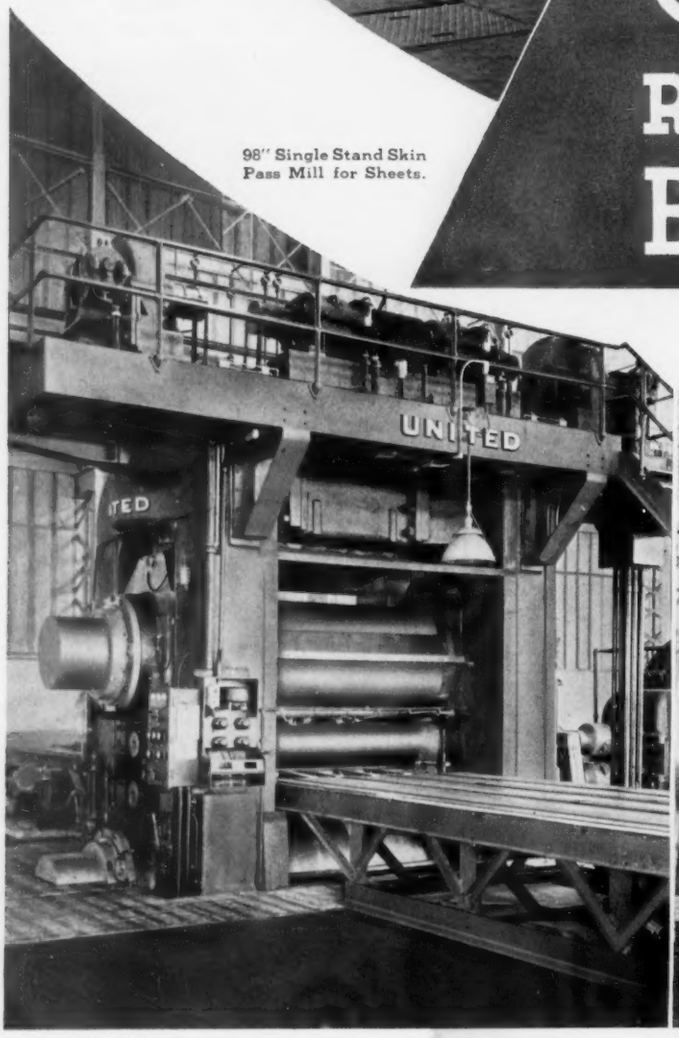
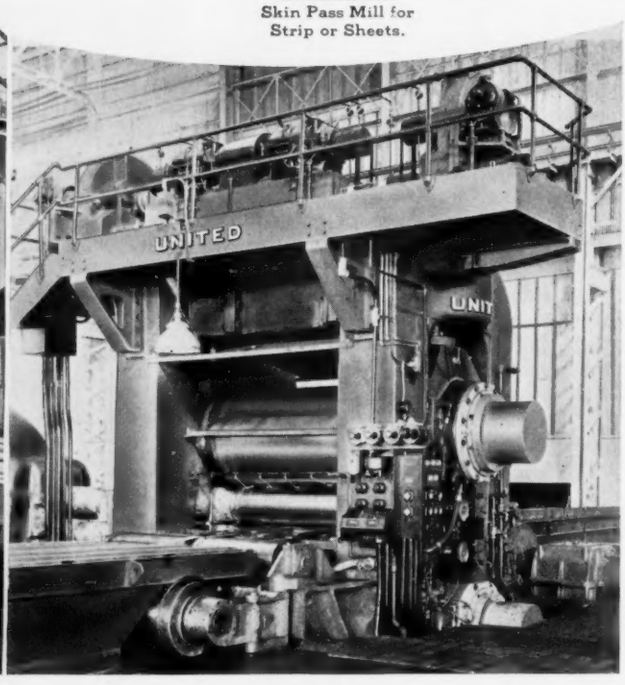
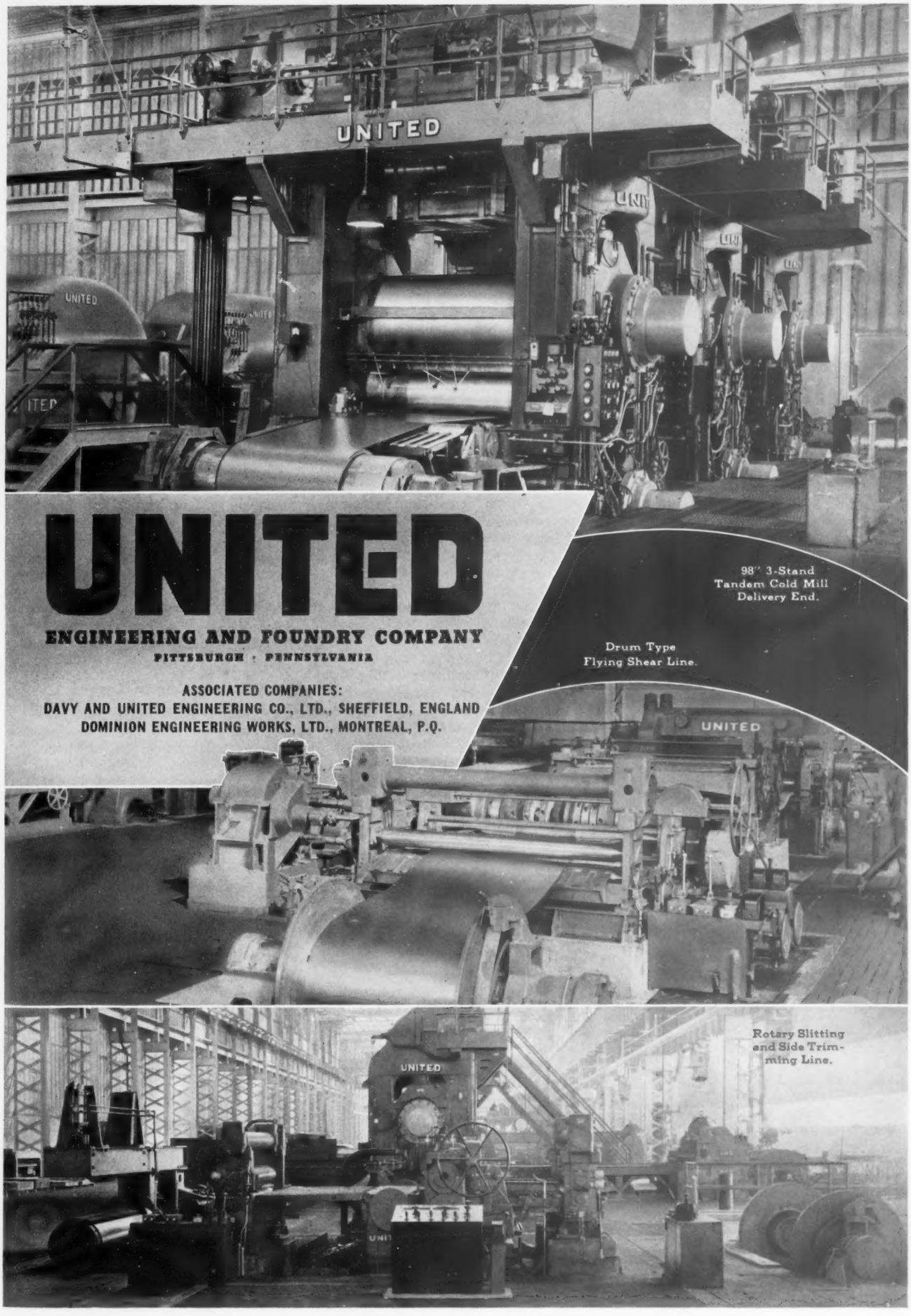


Combination Skin Pass Mill for Strip or Sheets.

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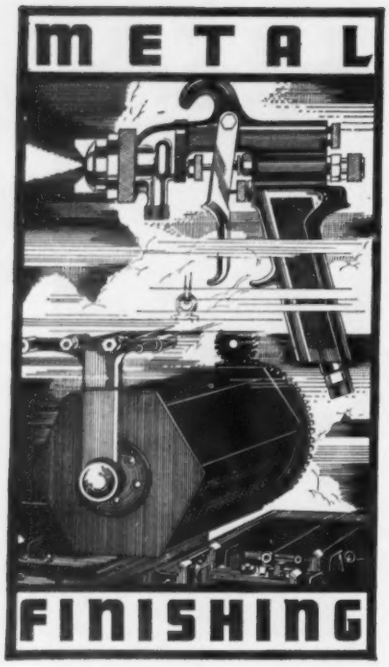


Sheet Galvanizing

More flexible coatings, necessary for deep drawing, may result by lowering thickness of inner alloy coating, accomplished by controlling path of work and dross distribution

By R. J. WEAN
President
Wean Engineering Co. Inc.
Warren, Ohio

■ COATING STEEL or iron sheets with spelter is an old practice which has advanced from hand dipping to mechanical handling of the work through the bath. In general, this machinery has been regarded only as a means of conveying the work through the bath with the least possible injury to the product. It now appears that a sheet galvanizing pot with co-related equipment should be viewed as a process, as this viewpoint has been found to be helpful.

About 1929 one-piece housings were introduced, eliminating excessive labor required to build old-type, multiple-piece riveted housings. Since then, this new type of housing has become practically standard.

Mechanical drives operating the various rolls have reached the point where forward motion of the sheet is smooth and speed relation between sets of rolls is easily controlled. A recent development is the use of individual motors for driving various sets of rolls, speed relation being maintained by electric control. This eliminates much machinery and mechanical maintenance. It also cuts down space required on drive side of each pot.

Zinc, properly applied on steel, is indeed a seal against corrosion. But if zinc coatings are to hold their position in face of competitive finishes not only the quality of the product but methods of applying coatings must be improved continually.

Abstract from paper delivered at twentieth annual meething, American Zinc Institute Inc., St. Louis.

Coating in Layers

Average galvanized sheet carries a coating of from one to two ounces of zinc per square foot of sheet surface, which according to authorities consists of three distinct layers. Directly adjoining the steel base is an iron and zinc alloy, having the formula $FeZn_6$; the middle layer is $FeZn_7$; and the outer coating is pure zinc. Also it is known that a heavy inner layer of zinc-iron alloy has a greater tendency to peel or flake off, particularly under bending operations. This inner alloy appears to be brittle and lack ductility so regardless of how elastic the outer surface may be, action of this under layer will force the zinc to flake off, exposing the steel surface to corrosive action.

Demand seems to be increasing for steel coatings that are sufficiently elastic to permit heavy forming and deep drawing operations. Coating for such material must have a minimum thickness of zinc-iron alloy. Coatings with a low percentage of iron are quite flexible compared to coatings carrying larger percentages of iron. Thus it would

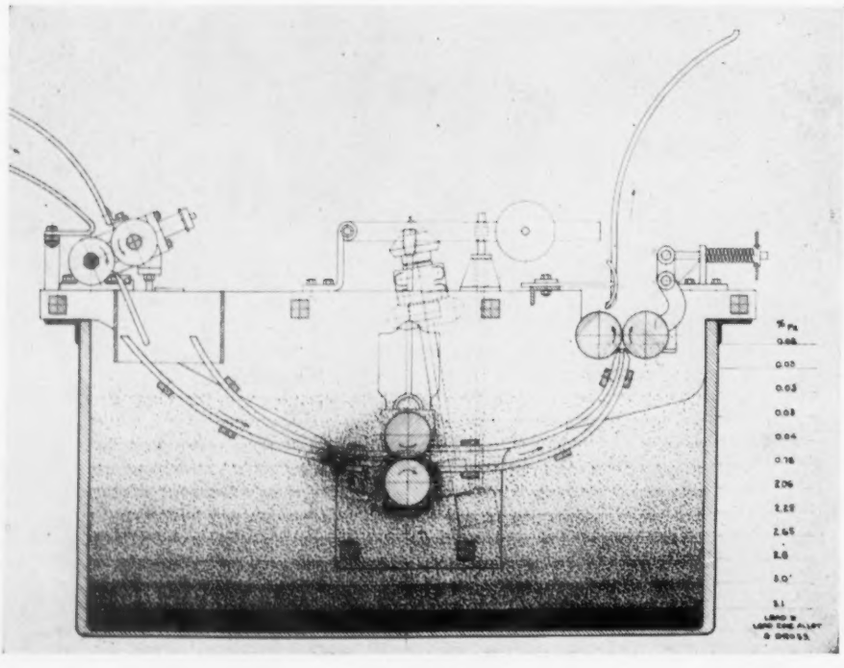


Fig. 1—Dross distribution, indicated by shading, in galvanizing pot with single bottom roll

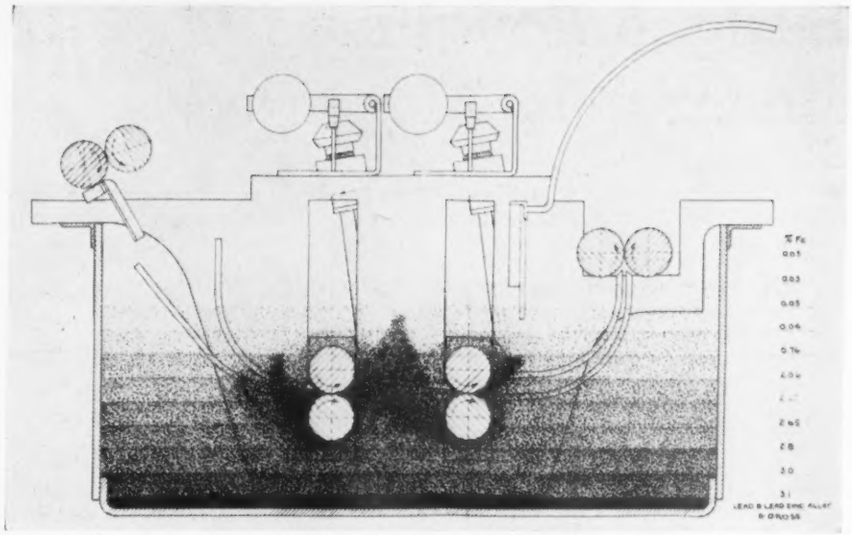


Fig. 3—Compare dross distribution, indicated by shading, in this double bottom roll to that in Fig. 1

seem that steps to develop coatings having a minimum amount of zinc-iron alloy would materially increase the possibility of producing more flexible coatings.

In a recent paper by George Brayton, superintendent, galvanizing division, Newport Rolling Mill Co., Newport, Ky., a chart, Fig. 2, set forth percentages of iron in the spelter at three different points throughout a week's operation at various levels in the bath. Iron content in the bath varied from 0.030 to as high as 3.2 per cent. Most interesting is the indication that iron content in upper 12 inches of bath grows less as the week progresses; that the iron content is increasingly heavier in lower part of pot; and that the part of bath in which the iron is more highly concentrated is about 60 per cent of lower depth of entire bath.

Affects Thickness

There appears to be some relation between percentage of zinc-iron layer on a coated sheet, generally from 3 to 4 per cent, and the percentage of iron in the zinc bath as indicated in this chart. Sheet usually passes through the zone carrying the high percentage of iron. It is believed that if the work were passed through only the upper part of the bath, in which is only 0.030 to 0.040 per cent of iron, a much thinner layer of zinc-iron alloy would be formed on the sheet. However, it is not practical to pass and feed sheets at a depth of only 10 to 12 inches below the surface of the metal.

If there is a relationship between iron content in the bath and iron content in the coating, then some practical means certainly can be devised to pass the sheet through that portion of the bath having low iron content. The immediately obvious way of doing this is to make pots deeper so the high concentration of iron will be below the zone through which sheets pass. Other ways of accomplishing the same result can probably be devised if this theory of producing flexible coatings is correct. Tests are being made but the work has not advanced sufficiently to make a conclusive statement.

In recent years, longer pots have come into use in several plants but it is a question whether or not these longer pots result in the proportional gain in production that theoretically can be expected. They require two sets of bottom rolls to convey the sheet through the longer bath. As shown in Fig. 1, one set of working rolls near bottom of bath sets up a certain amount of disturbance in dross or iron particles which have not become heavy enough to settle to pot bottom. This

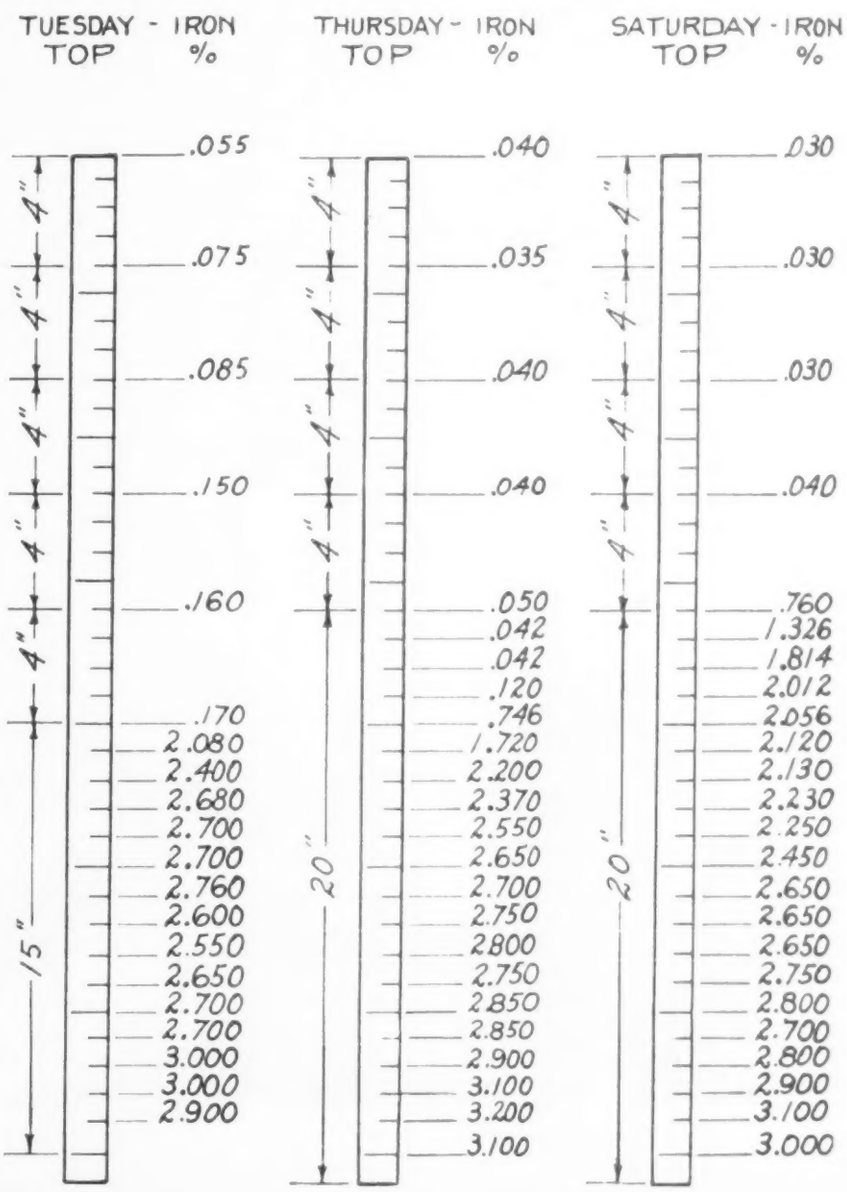


Fig. 2—Per cent of iron content in various parts of bath throughout a week's operation

is shown by shading dross spots on the sketch. Since greater disturbance in the bath causes more of these particles to adhere to the sheet, result is either to increase iron content on the sheet or to cause dross spots. Thus it becomes necessary to reduce this agitation.

Dross movement and the turbulence created by a double-bottom roll machine definitely may be objectionable. It is believed to create more than twice the disturbance found in single bottom-roll machine, largely because of the concentrated disturbance set up between the two sets of rolls as shown in Fig. 3.

Slow Speeds Necessary

While increased pot length should give greater speeds through the machine, in order to keep down this disturbance of dross it is necessary to operate at slow speeds which will, of course, defeat the purpose intended.

This would not be true if the machines were operated only on lead-zinc baths, but here again there is another factor which works against the higher speed, in that most sheets calling for lead-zinc coating are of a gage that will not stand too high a speed through the bath without cobbling.

Limiting Factors

It is worth little to a producer to install an expensive item of equipment out of which he cannot get maximum tonnage or production due to some other limiting factor than the speed of the equipment. Rule of reason must be followed in the installation of all equipment, and this is true particularly in a galvanizing department. A modern galvanizing unit today has unlimited speed control possibilities so speed-limiting factor is not the machinery but the conditions prevailing in the bath and the speeds at which the various gage sheets can be passed through the machine and still have a satisfactory coating.

Surface Roughness Is Accurately Measured

■ ACCURATE measurement of surface roughness is required on machining operations where a high degree of finish is essential. In the automotive field, for example, honing and lapping operations require greater and greater precision as it becomes necessary to remove finish marks from the work as far as possi- in order to reduce initial wear and cut down the "run in" period. When fine scratches are left on machined surfaces, it means that the initial fit must be extremely tight to prevent excessive clearances when the parts have "worn in."

A new development, which facilitates precision work such as required above, is called the Profilometer, and is made by Physicists Research Co., Ann Arbor, Mich. It is designed for the rapid measurement of surface roughness and is particularly suitable for use on fine machined surfaces produced by grinding, honing, lapping. It can be used on flat, cylindrical or curved surfaces of wide variety as to size and shape. The surface measured is not scratched or damaged in any way.

The equipment consists of two parts, a tracer unit held in the hand and an instrument box connected to the tracer by a cable and carrying the power supply, amplifiers and indicating instruments. In operation, the tracer unit is moved over the surface to be measured, a needle point rides up and down the surface irregularities and a vacuum tube amplifier in the instrument case amplifies the currents produced by the motion of the needle point and impresses them upon the indicating meter. The entire system is designed and calibrated so the indicating meter gives a continuous running average (root mean square) of the height of the surface irregularities.

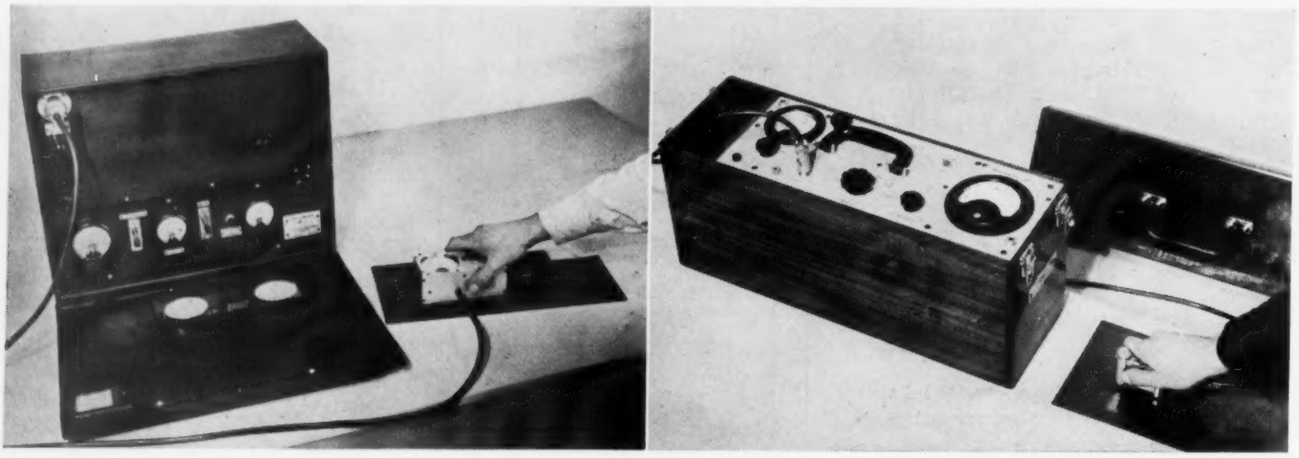
The reading obtained is independent of the speed of the trace, and the tracer can be moved either manually or mechanically. For most work, a rate of trace of about 1 inch per second is convenient. Tracer details and instrument box can be modified easily for various applications and mountings. The equipment can be battery powered for portable use or connected to a convenient power source when employed as a stationary unit.

Adjusts Sensitivity

A wide range of sensitivities is available through a selector switch which adjusts the sensitivity so that full scale reading is 3, 10, 30, 100, 300, or 1000 microinches (millionths of an inch). This range appears to be adequate to cover all present-day surfaces.

Since effective use of such equipment depends upon the accuracy and permanency of its calibration, the instrument is not only given a primary overall calibration measured against displacements of the tracer point when it is built but provision also is made for convenient secondary recalibration of the amplifier in the field.

Because irregularities which constitute the roughness of most surfaces are only a few thousandths of an inch across, the instrument is designed to measure irregularities whose widths do not exceed about 1/32 of an inch. Longer waves, curvature of the surface, and the like, do not record on the meter,



Left, roughness measuring equipment for stationary use. Right, portable instrument

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HOW MUCH ARE YOUR MOTORS COSTING YOU PER YEAR?

Get The Facts On How Allis-Chalmers "LO-MAINTENANCE" Motors Can Save On Service Costs . . . And Maintain Production!

● How much did your motors cost you last year? You'll be amazed at the true total. Remember you must add to your actual repair bill the cost of loss of production while repairs are made. Multiply this figure by the number of motor shutdowns. The total often represents a figure a good manager never overlooks.

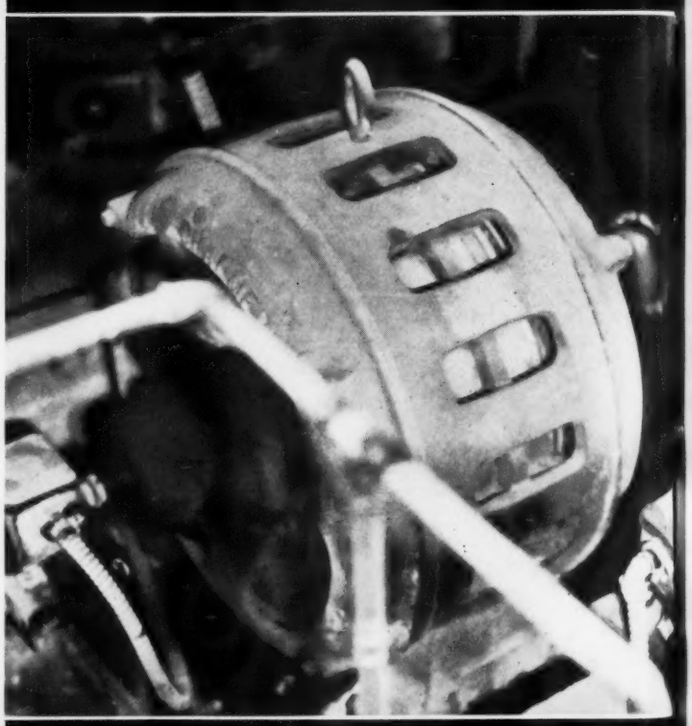
Check Through Your Plant with This in Mind

Do your motors run up service costs? If they do, it is time to replace them with Allis-Chalmers "Lo-Maintenance" Motors. They keep your production costs down and enable you to meet competition . . . because your machines will be powered for efficient operation and increased earnings. On a cost-per-year basis, Allis-Chalmers "Lo-Maintenance" Motors offer you unequalled economy. Although motors will often look alike, the true test in value to you is determined by the answer to the question—will they stand up under service conditions? Informed engineers and production men specify Allis-Chalmers "Lo-Maintenance" motors because they meet this requirement.

Records Prove that Allis-Chalmers "Lo-Maintenance" Motors Save on Service Costs

For nearly fifty years Allis-Chalmers has been building motors serving thousands of plants the country over. The records these motors have made, for consistent operation without shutdown for repairs, is favorably reflected in the maintenance account. Allis-Chalmers Motors have given management the answer to the problem of maintaining production.

Before you purchase new motors or replace old ones, investigate the profit-making possibilities of Allis-Chalmers "Lo-Maintenance" Motors. There's an Allis-Chalmers engineer in the district office near you. Let him show you how you can save on service costs.



This Allis-Chalmers "Lo-Maintenance" Motor has given fourteen years of uninterrupted service, milling rubber, with maintenance costs so small they can't be calculated.

MOTORS FOR ALL APPLICATIONS FROM ½ HORSE POWER AND UP

ELECTRICAL DIVISION

ALLIS-CHALMERS

MILWAUKEE · WISCONSIN

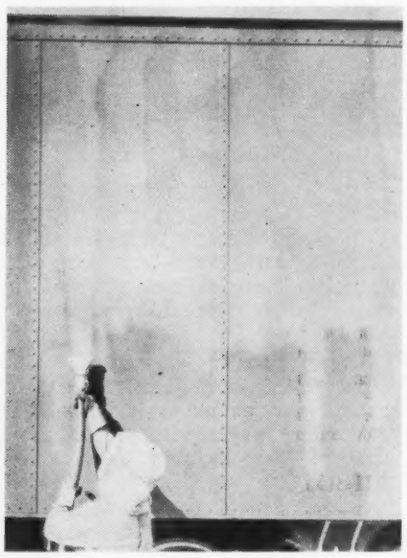
which makes it possible to measure the roughness of such surfaces without surface curvature influence. Under some conditions, however, the instrument can be arranged to measure waviness.

The field of application is unusually broad. As a portable, self-contained unit it can be used to measure surface roughness of sheets and other materials in stock, roughness of various parts subject to abrasion or wear and in other similar applications. As a permanently mounted instrument it is suitable for rapid production testing of finished surfaces such as on bearings, pistons, cylinders, valve seats, valves and bearing housings. Use of this instrument makes it possible accurately to check lapping and honing operations on a production basis. This facilitates check of tools and process to maintain surface finish standards.

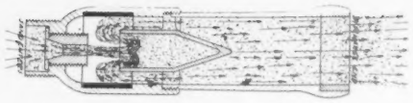
Gun Permits Good Preparation

■ THIS GUN features a chamber in which the sand meets a baffle setting up a whirling motion to reduce the sand particles and to increase the cutting edges. Sand is delivered under pressure through a flattened orifice fitted with abrasive-resistant, alloy steel lips. The result is a flat stream of sand expelled under uniform pressure.

Made by Michiana Products Corp., Michigan City, Ind., the new gun has been employed for cleaning wood refrigerator and steel-sheathed cars preparatory to refinishing. The inventor, F. W. Schultz, superintendent of the Santa Fe railroad



Flat sandblast cleans metal surfaces thoroughly and at high speeds



Sketch showing principle of Michiana Sand Gun

shops at Wichita, Kan., has used the gun for this service for a number of years.

The sand blast produced is said to provide good surfaces for painting and finishing steel or wood and to clean such surfaces in much less time without injury to surface.

Aids Sign Visibility

■ Steel roadside signs, railroad crossing indicators, traffic signals, bridge and dead-end signals as made by National Colortype Co., Bellevue, Ky., employ an interesting use of chromium plating. A comparatively recent development incorporates reflector buttons arranged to reflect

Cross section of reflector button

light from headlights at night, greatly enhancing sign's attention value.

Accompanying illustration shows cross section through one of these buttons which are highly developed for this particular application. They consist of a die-cast alloy body shell which houses the reflector and lens and over which the clamp shell fits. Zamak No. 3 alloy is employed as it is not only tough and malleable, but its dimensions are stable and it retains its physical properties indefinitely. Clamp outer shell is hard brass. Refector buttons are clamped on sheet steel surfaces by inserting through hole against shoulder, die cast on body. Clamp is screwed up against back of sign.

Reflectors are made of nonferrous metal and chromium plated to furnish a highly efficient reflecting surface which will not tarnish or deteriorate. Some of these have been in service over 5 years with no loss in reflecting efficiency, it is claimed.

Use of chromium was found superior to other reflecting surfaces as it retains its bright finish and therefore its reflecting power indefinitely which is of prime importance in this application.

Color Increases Plant Efficiency

■ MANUFACTURERS, office managers and shop foremen agree that color is an important factor for better, faster and more pleasant work, a statement supported by actual case histories.

When a shoe manufacturer changed the color of his machines from black to orange, the contrast between machines and product made seeing easier and a better quality of workmanship was apparent at once. Fatigue and nervous tension were reduced; accidents lessened. Interdepartmental rivalry for greater cleanliness developed. Most important was the sharp rise in speed-of-production curves. The plant manager summed up his experiences by saying: "Colored machines mean cleaner machines, cleaner workers, cleaner products."

For a "cool" atmosphere, green is the ideal color, according to Skybryte Co., Cleveland. Blues, also, are suitable except for the darker shades. A white ceiling; medium shade of pea green for upper walls and large vertical areas; gray-green for dado, columns and machinery has been found effective in eliminating complaints of excessive warmth.

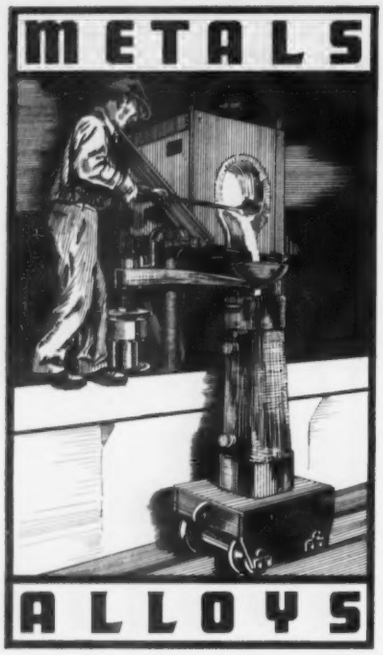
For a "warm" atmosphere, yellows, orange and buffs are suitable. They are excellent for rooms with lower-than-normal temperatures.

To reduce eye strain, use paints with high light reflectivity for large expanses in the room so as little light as possible is lost. To relieve nervous tension, green is valuable because of its "friendly" appearance. Softer shades of yellow also create amiability. Gray should be avoided because it depresses.

To stimulate physical energy, red and reddish orange are best. To command attention and for danger areas, fire red appears the ideal color because of its sharp, contrasting nature and psychological association with blood. Use red on switch handles, conveyor trucks, belt guards, crane lifts and for marking aisles, storage zones and passageways.

Black Coloring Solution

■ Heatbath Corp., Springfield, Mass., has developed a material known as Penetrate Black. This new material comes in the form of crystals which dissolve in water and which color steel parts black when they are Immersed in the solution. Two solutions are used, one maintained at a boiling point of approximately 285 degrees Fahr. and the second at approximately 310 degrees.



Cast-To-Shape Dies

Dies good after making 750,000 parts. Alloy saves 30 to 50 per cent in original cost by reducing or completely eliminating finishing. Alloy also used for its abrasion resistance

■ AN INTERESTING alloy recently developed for die service is Strenes metal, a chromium-nickel-molybdenum alloy with a high-steel base used primarily for cast-to-shape forming and drawing dies. Outstanding characteristics include 50,000 pounds per square inch minimum tensile strength, 4000 transverse, deflection factor of 0.23 and ability to heat treat to a hardness of 525 to 550 brinell or 55 to 60 Rockwell C and to a tensile value of 75,000. It is close-grained, takes a high polish and has excellent graphitic surface lubrication.

Actually, Strenes metal has two main divisions of application: First, for forming and drawing dies of all types; second, for use where resistance to abrasive action is vital such as sand and gravel chutes, crushing rolls, and steam-hammer sleeves and dredge pumps. Fig. 2 shows shell, weighing 13,000 pounds, for centrifugal dredge pump, other parts also are of Strenes metal. Being unaffected by abrasion, life of pumps is increased three or four times over that usually obtained.

Used for Coke Crusher

This material has been found particularly suitable for coke crushing rolls and disks. Rolls are built with diamond-point faces, the points as high as 2 inches. Their average of two year's service, four times usual life, is impressive considering the highly abrasive action of the coke.

Strenes metal for die service is made in two types, B and C. Strenes C is the extremely hard, long life type whereas Strenes B is slightly softer grade used where long service is less important due to frequent model changes. In die work, it makes possible almost complete elimination of Kellering, machine finishing and use of steel inserts as Strenes metal can be cast to shape accurately. Fig. 1 shows a die made without any machine finishing. Forming grave vault ends, die operation is unusual in that 0.108-inch material is trued accurately with side action cams. Draw is 3½ to 4 inches here.

Die shown in Fig. 3 is in its fourth year of operation making refrigerator tops where a 3-inch double-cornered draw is required. It has made more than 750,000 stampings from 0.050-inch material. It requires stoning and polishing only twice a year, compared to six times for the die it replaced, and all metal finishing and breakage has been eliminated since the change. Strenes metal dies are 30 to 50 per cent less expensive originally and need be polished and stoned only one third to one sixth as often as usual since pickup and galding of parts is eliminated, it is said.

Withstands Stress

The low deflection factor of 0.23 enables dies of this metal to withstand great stresses and strains. In addition to low breakage, its graphitic lubrication makes for easy operation and reduction of scrap, especially on difficult draws.

Strenes metal dies are being widely used in the automotive industry, one company having 19 in operation varying in weight from 2000 to 3000 pounds each. Other

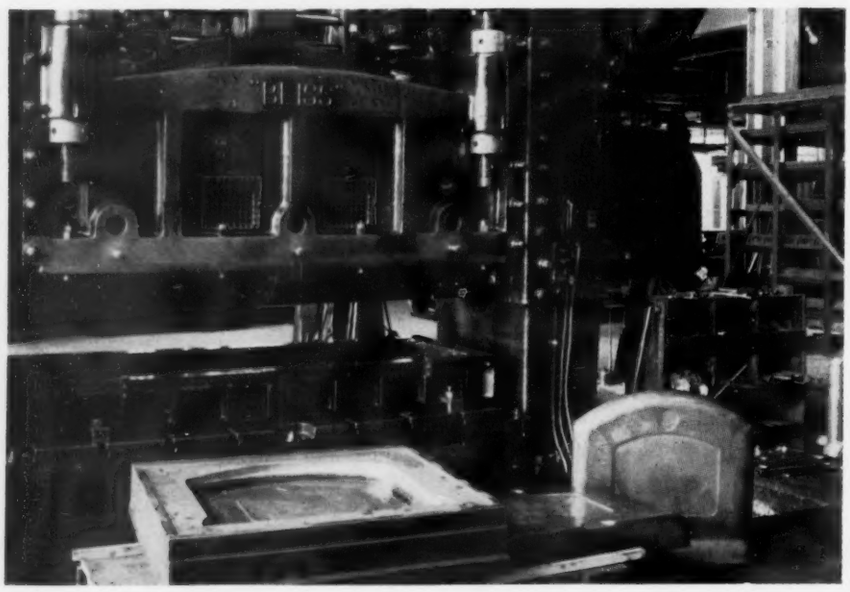
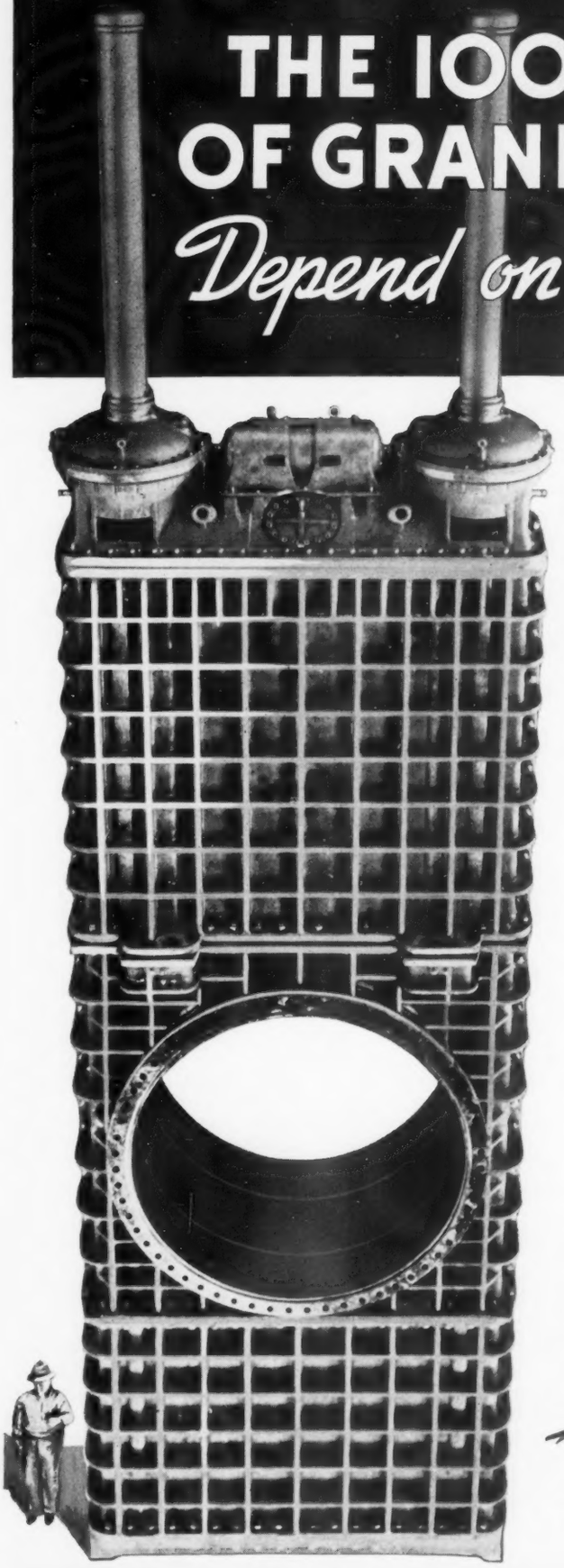


Fig. 1—Die set for making grave vault ends. This die was cast to shape and required no finishing work

THE 100 TON GATES OF GRAND COULEE DAM *Depend on these Bearings*



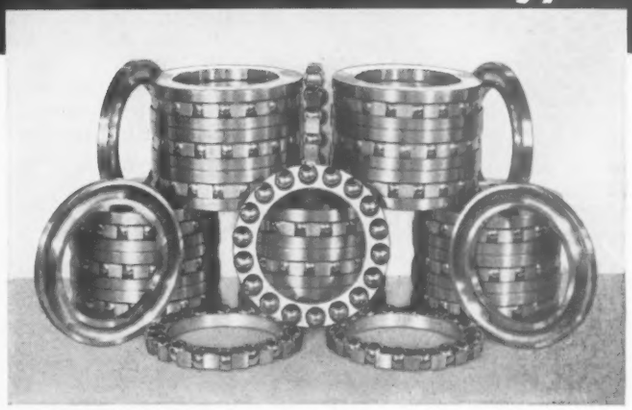


Photo above shows part of the Bantam Bearings used on the gate hoists of the Grand Coulee Dam on the Columbia River.

AN important part in the operation of Grand Coulee, longest and most costly concrete dam in the world, is to be performed by Bantam.

To assure smooth and reliable operation, each of the twenty 100-ton paradox gates on Grand Coulee uses a Bantam bearing on the Gate Hoist. The gates, made by the Hardie-Tynes Mfg. Co. of Birmingham, Alabama, are 45 feet high by 12 feet wide, with outlets nearly 9 feet in diameter. This order was the largest ever awarded by the government for gates of this type.

Manufacturers in increasing numbers rely on Bantam Bearings to insure long, trouble-free operation of their equipment. You are invited to outline your requirements to Bantam.

BANTAM BEARINGS CORPORATION
SOUTH BEND, INDIANA
Subsidiary of THE TORRINGTON CO.
Torrington, Conn.

BANTAM BEARINGS

TAPERED ROLLER • • • STRAIGHT ROLLER • • • BALL BEARINGS

Strenes metal dies include 10,000 and 12,000-pound truck fender and body top dies. Five passenger car builders, using headlight dies cast

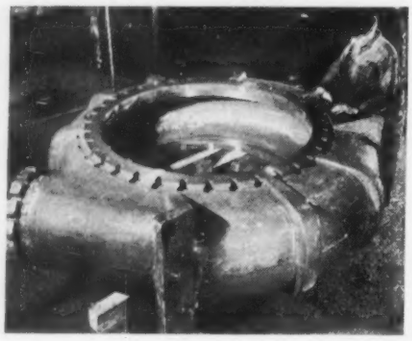


Fig. 2—Dredges of Strenes metal give three to four times usual life

to shape from Strenes metal, find it eliminates about 90 per cent of machining formerly required.

Steam hammer sleeves of Strenes metal show a life four times that usually obtained. Sleeves are from 10 to 20 inches in diameter and 6 to 8 feet long. Strenes metal has been found particularly practical here because of its close grain and its ability to take the high polish so necessary on the inside of these parts.

Forms Trays

Another die set of interest is used to form vegetable trays for refrigerators. Here 0.030-inch material is given a 5½-inch draw in one operation. More than a half-million parts have already been stamped from the original die. Strenes metal dies also are being used in manufacture of stove parts, farm-implement parts, and many specialties such as ash-trays, pie plates, etc. One manufacturer using a fibrous material has engraved decorative characters directly on the Strenes metal, eliminating the need for inserts. This compares to the casket manufacturer who uses Strenes embossing dies to form casket hardware.

Another use for this material is in bushings where it is hardened and ground to limits of plus 0.000 and minus 0.003-inch. A typical application is on marine pumps, more than 1000 being furnished one manufacturer of this product in 1937.

Strenes C is referred to in above case histories. Strenes B is not recommended for heat treatment where maximum hardness is required. Both are made with special equipment by a controlled process. Originated and produced only by Advance Foundry Co., Dayton, Ohio, Strenes metal analysis is varied slightly in most every application to produce the exact characteristics desired on that job. This largely accounts for the successful record made by Strenes metal dies in the wide variety of applications in which it is being used.

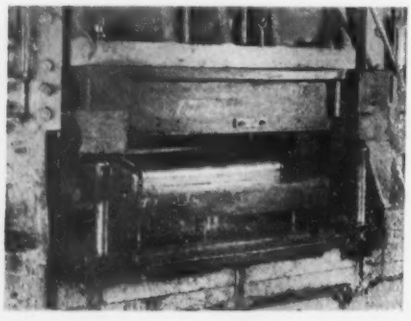


Fig. 3—Refrigerator top die has made more than 750,000 parts. Still in excellent condition. Makes a 3-inch double-cornered draw in 0.050-inch material

Aircraft Use Many Alloys

■ AIRCRAFT CONSTRUCTION utilizes a wide variety of alloys for different parts of the structures. Since strength combined with light weight and corrosion resistance are the essential qualities involved, it is interesting to note the particular alloys employed.

These may be grouped roughly into aluminum alloys and steel alloys. Bent and formed parts which may be severely formed during shaping employ bars, sheet and tube stock of aluminum alloy 24SO. Parts mainly flat or not severely formed which also may be made from bars, sheets ar tubes usually consist of aluminum alloy 24ST. Truss members in wing spars commonly tubular in form employ aluminum alloy 24SRT which alloy also is used in the form of corrugated sheet as under surface of wing covering. Outside skin of bodies and wings in the form of straight sheet is usually Alclad alloy, similar in specification to above alloys.

Aluminum Tubing Used

Welded furniture, largely made from tubing, employs aluminum alloy 17ST. Fuel and oil lines use tubing of aluminum alloy type 52S. Tanks for fuel and oil are made from 3SO aluminum sheet. Aluminum type 2S is used principally for heating and ventilating ducts, also for conduit and miscellaneous small parts.

Steel alloys include SAE 4130 which is a chromium-molybdenum steel. This is used in bar, sheet and tube forms for practically all steel parts except where extremely heavy sections may be required. These heavier sections, made from solid bars and heavy plates, usually consist of SAE 4340, a chromium-nickel-molybdenum alloy.

Bolts and clevis pins are made from alloy type SAE 2330 which contains 3½ per cent nickel. Alloy type SAE 1020 is used to a limited extent for case-hardened parts. Hardened gears usually employ SAE 2515.

Alloy type SAE 1025 is used to a limited extent for staked bushings and parts of similar nature. Spring parts are made from alloys such as type SAE 1065 and SAE 1095.

Stainless steels are employed in a number of places including heating boilers, steel parts in contact with salt water and parts on which no protective coating can be applied. Exhaust collector rings, stoves, etc. use considerable Inconel.

The alloys listed above are employed by the Boeing Aircraft Co., Seattle, Wash., for service indicated in their particular type of airplane construction. Practice of other airplane companies may differ slightly from that given.

♦

Air Conditioning Field Covered in New Text

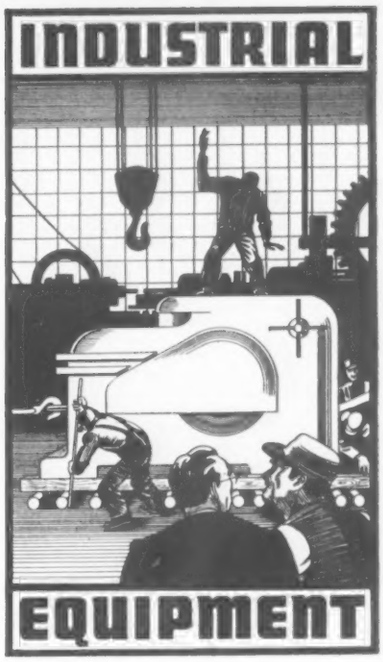
■ *Air Conditioning, Heating and Ventilting*, by J. Ralph Dalzell and Charles L. Hubbard; fabrikoid, 571 pages, 5½ x 8¼ inches; published by American Technical society, Chicago; supplied by STEEL, Cleveland, for $4; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London, S. W. 1.

In a field of such recent growth many methods are employed for designing, applying and installing systems and equipment. The authors therefore chose to present several methods, all of which have been found practical in a field with few standard practices.

Principles and calculations have been simplified to place them within reach of those possessed of mathematical and simple algebraic knowledge. A number of descriptions of actual or representative jobs are given, to show the applications of principles, but no attempt has been made to cover all possible applications.

Practice problems are presented but without answers being given, as probably no two engineers would arrive at exactly the same conclusion. This is due to varied application of principles and different use of tables and charts. Numerous manufacturers' tables of operation and selection have been included, to supply all that is necessary for classroom and individual use.

An excellent index assists the reader in finding references to a given subject.



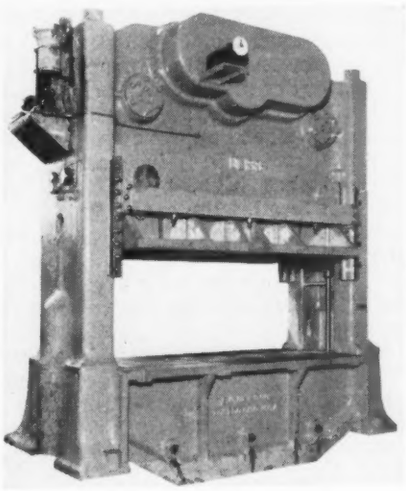
Press Lubricated With Filtered Oil

■ E. W. Bliss Co., Brooklyn, N. Y., recently has introduced a new two-point suspension single or double-action press with a 10-inch stroke and a 5-inch adjustment of slide.

Motion to the slide is accomplished through heavy, full eccentrics, cast as a unit with the bull gears. This entire unit is enclosed within the crown and is lubricated by a constant flow of filtered oil handled by a combination oil pump and filter.

An indicator on the crown gives position of eccentrics, and a graduated scale on the right-hand gib tells at what distance slide is adjusted up or down.

In the bed are three 24-inch diameter externally-guided pneumatic cushions, with extra long guides to



insure accurate alignment. Distance from bed to slide is adjustable up to 30 inches. Bolster measures 60 x 108 inches, front to back by right to left, and is 6 inches thick.

Milling Cutters Are Standardized

■ Ex-Cell-O Corp., Detroit, has developed a new standard line of tungsten carbide-tipped removable blade milling cutters, embodying the Continental-type RC blade lock. Standardization program is expected to speed deliveries and reduce blade and tip replacement costs.

In the construction of the blade lock, tapered blades fit into accurately tapered seats, blade supports being integral with the cutter body. Blades may be adjusted individually any desired amount. This type of lock facilitates setup or changing of blades, since blades are locked in place in pairs with an external clamp requiring only a turn of an Allen wrench to tighten or ease the clamp. Other advantages of this construction include assurance of maximum heat conductivity through provision of accurately fitting full-face blade seats and security of blade lock without need for end stops.

New Pump Line Services Broad Field

■ Goulds Pumps Inc., Senaca Falls, N. Y., has announced a complete new line of single stage, side suction, ball bearing centrifugal pumps, with capacities from 5 to 1600 gallons per minute, against heads up to 110 feet.

Simplicity of construction and design with unusual structural strength are outstanding features of these pumps. Modern hydraulic design is embodied in casings, impellers and stuffing boxes. These pumps are suited for general water supply; circulating and transfer service in industrial plants; for handling hot and cold water, brine, etc., in the air conditioning and heating fields; and for irrigation and other farm supply service.

Riveter Is Flexible

■ Chicago Rivet & Machine Co., 1810 South Fifty-fourth avenue, Chicago, recently has introduced a flexible bench-type riveting unit, designed to give to small volume manufacturers the advantages of automatic multiple setting.

This riveter has double riveting heads and an adjustable centering device. One head remains stationary, while the other can be adjusted quickly in or out by means of a belcrank and lead screw. Drive is a ¼-horsepower motor, and a single clutch operates plunger, providing uniform rivet insertion and closure and eliminating marring of rivet head or unbalanced tension. Heads may be operated simultaneously to set two rivets at a time, or the feed on either head may be locked to permit single rivet setting.

Two models of this machine are available, one for light, and the other for heavy duty work.

Buff Is Air Cooled

■ Udylite Co., 1653 East Grand boulevard, Detroit, has added to its line a new buff, known as the Masterfold, constructed on a principle designed to give faster cutting, longer life and better finish.

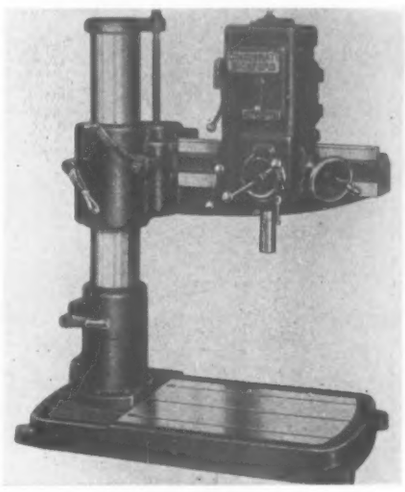
Cloth is folded to present multiple edges that cut instead of rub, and to provide air spaces between plies. This dissipates heat generated by friction due to pressure of buff on work. Buffing action is uniform over entire face of wheel, and ridging, pitting and chattering are eliminated.

This buff is designed to finish all metals and plastics, and can be used on both automatic machines and hand operated lathes. Best results are obtained at speed of 8000 surface feet per minute.

Drills Large Parts

■ Cincinnati Bickford Tool Co., Oakley, Cincinnati, had introduced a high speed radial drill, developed for manufacturers whose work includes much small drilling and tapping in fairly large parts.

With the use of a 2-speed alternating current motor, six spindle speeds can be obtained with this drill. Three rates of power feed, 0.003, 0.006 and 0.009-inch per revolution of spindle, are instantly selected by setting indicator lever at center of head. Power feed is engaged by quick-return levers directly above



spindle, which are used also for hand feeding. Spindle control lever operates built-in pushbuttons controlling the 1-horsepower motor which is mounted at rear of the head. Arm and column are clamped by levers within easy reach of operator, and arm elevation is manually operated. Head is fully enclosed and contains a rotary pump which circulates oil to every moving part. Spindle is chromium nickel steel and is mounted on anti-friction bearings, packed in grease.

Design of this drill makes it suitable for plants producing automotive and aircraft parts, agricultural machines, electrical devices, military equipment and business machines.

Gun Sprays Heavy Materials

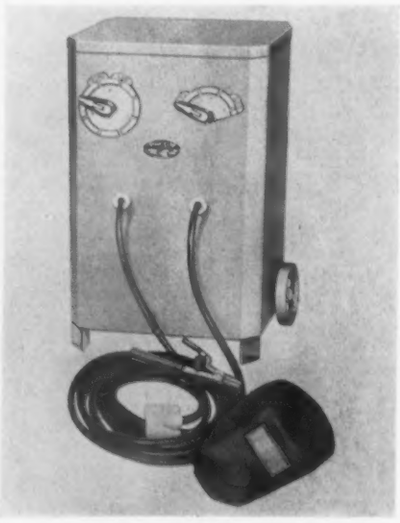
■ Binks Mfg. Co., 3114 Carroll avenue, Chicago, has announced an improved spray gun for heavy materials, designed so that asphalt paints, sound deadener materials containing sand and other abrasives, and similar substances will flow easily through from material inlet to nozzle.

This gun is offered with a variety of nozzles and has a ¾-inch material inlet opening. Nozzles can be furnished to deliver either round or flat spray. Like the model it replaced, this gun is of the internal atomization type.

Welder Is Portable

■ Giant Grip Mfg. Co., Oshkosh, Wis., has added to its line a portable alternating current welder for heavy duty service.

This model has two dials on front of its cabinet instead of a switch on the top or panel board. It has a specially designed transformer, reactance control, static high frequency current, a large number of heat controls and a cooling system that eliminates hot spots in the coils.

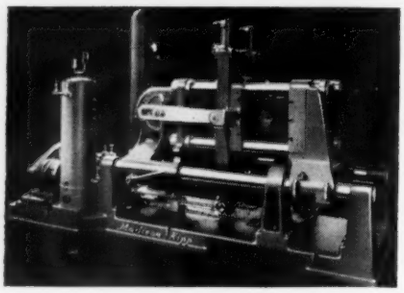


Welding range is from 10 amperes to maximum output, with constant open circuit voltage that assures arc flexibility at all amperages. This model is built in three sizes with capacities from 165 to 300 amperes and weight from 215 to 325 pounds.

Injects Metal At High Pressure

■ Madison-Kipp Corp., Madison, Wis., has announced a series of cold chamber die casting machines for the high pressure casting of aluminum, magnesium and brass.

These machines are made in three sizes. The smallest, known as No. 400, has a capacity for aluminum castings up to 0.9 pound, for brass, 1.5 pounds and for magnesium, 0.6 pound. Total injection pressure on metal is 19,000 pounds. The intermediate size machine, No. 440, has capacities of 2, 1.2, 5 and 3 pounds for aluminum, magnesium, zinc and brass, respectively. Its injection pressure is 38,000 pounds. Rated capacities of the largest size, No. 404, are 3.25, 2.16, 7.4 and 4.5 pounds for metals in above order, at an injection pressure of 63,000 pounds. Hydraulic power provides pressure to force molten metal into die space, and a hydraulic locking mechanism holds die closed during casting period.



A separate melting furnace and crucible are used, from which successive shots of metal are ladled into a well under the die. Machine may continue to operate automatically, with a finished casting removed and a new shot of metal ladled into well manually during each cycle.

Lathe Turns Shells

■ Reed-Prentice Corp., Worcester, Mass., has recently developed a single-purpose plain turning lathe for heavy turning of shells and other jobs such as rifle turning and gun-barrel turning on machine guns.

Spindle speeds and feeds are obtained with pickoff gears between motor and headstock and between spindle and feed rod mechanism. Oil pan is furnished as regular equipment, and oil pump equipment can be furnished as an extra.

Lathe has a swing over ways of 16½ inches, a swing over bridge of 10⅜ inches, and the distance between centers with cam tail five-foot bed as 17 inches. Six, seven, eight and ten-foot bed lengths can be furnished.

Industrial Battery Has Increased Capacity

■ Electric Storage Battery Co., Allegheny avenue and Nineteenth street, Philadelphia, has placed on the market another super type electric industrial truck battery of sufficient capacity to provide power to operate trucks of 30,000 pounds capacity for 12 hours on one charge.

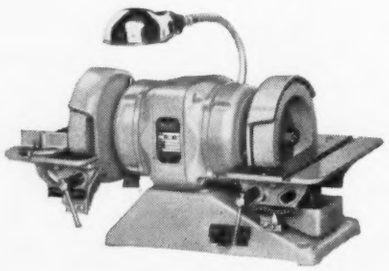
Battery of standard assembly with 18 cells, 21 plates, assembled in steel trays, weighs approximately 4200 pounds, and is 54⅛ inches long, by 25⅞ inches high, by 31⅛ inches high, overall. Its capacity is 1000 ampere hours, or 34.4 kilowatt hours. A 24-cell size, with 21 plates per cell, has a capacity of 45.9 kilowatt hours at normal discharge rate.

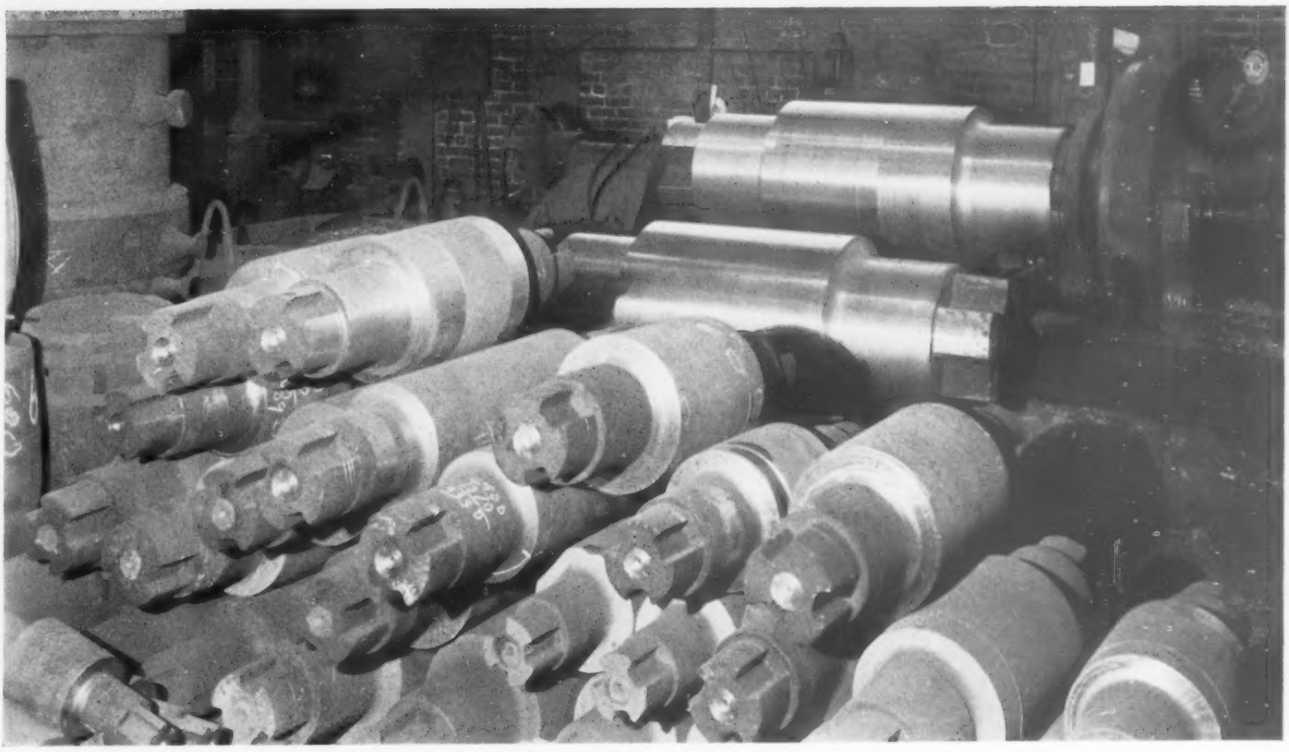
This battery has been developed particularly for use in the steel and automobile industries, where huge ram and fork trucks with load capacities of 30,000, 40,000 and even 50,000 pounds are employed.

Grinder Has Protractor Type Tool Support

■ Baldor Electric Co., 4351 Duncan avenue, St. Louis, has announced several changes in construction of its carbide tool grinder.

Tool rest tables are adjustable to compensate for wheel wear, and the angle of each table is indicated by protractors mounted on sides of grinder. Machine is powered with a ½-horsepower reversible motor, rated at 3400 revolutions per min-





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ute. Motor is equipped with full size ball bearings and thrust washers to prevent end play, and is dustproof. Grinder can be supplied with an especially adapted diamond wheel dresser.

Holds Packages On Steep Incline

■ United States Rubber Products Inc., 1790 Broadway, New York, has developed a conveyor belt of special crepe rubber cover design for handling packaged material on a greater degree of incline than is normally encountered.

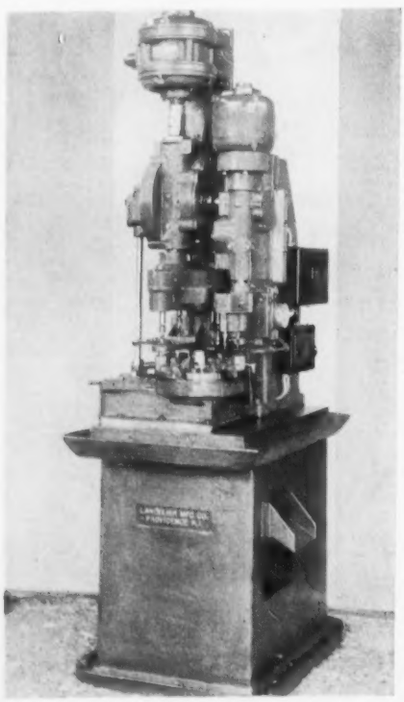
Crepe surface of this belt has remarkable holding qualities and is said to be tough and resilient. While it provides necessary roughness, its design is such that it is cleaned easily.

Belt is furnished on 28 and 32-ounce duck, with minimum top cover thickness of 1/16-inch.

Drills Electric Razor Cutters

■ Langelier Mfg. Co., Providence, R. I., has added to its line a vertical 7-spindle drilling and tapping machine for handling the right and left hand stationary cutters of an electric razor.

Machine has a standard positive cam feed automatic unit equipped with a 5-spindle multiple drill head and a smaller unit equipped with a 2-spindle tapping head with compensating spindles. Latter is driven by a reversing motor, with limit switches controlling amount of tap travel.

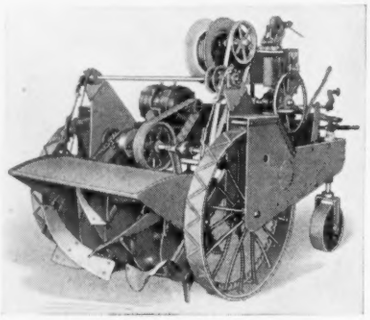


Work holding fixtures are of hand clamping type, and drills are started accurately through guide bushings. Fixture at front of machine is used for loading and removing pieces.

By continuous six-station operation, a production rate of 900 pieces per hour is maintained.

Employs Rubber Conveyor

■ American Foundry Equipment Co., 555 Byrkit street, Mishawaka, Ind., has introduced a small airless abrasive blasting unit designed to clean a limited volume of small



castings, forgings, heat treated parts, springs and stampings.

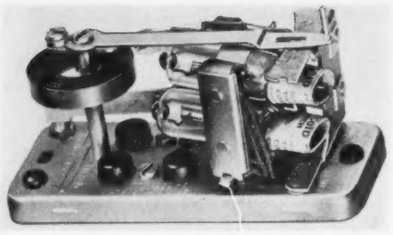
Unit consists of a patented bladed wheel, turning at 2250 revolutions per minute. Abrasive is fed into bladed sections of wheel through a control gate located at center of wheel, and centrifugal force hurls abrasive upon the work. Volume and direction of abrasive is controlled so that any type of finish is obtainable.

A rubber conveyor is used with this machine for tumbling the work, instead of the usual metal conveyor, giving a gentle tumbling action in which pieces cascade one over another. Travel of conveyor is adjustable through a speed reducer, permitting control of time work is exposed to blast.

Machine has an operating capacity of two cubic feet, and is known as the 20 x 27-inch model. A total of 6 horsepower is required for operating the unit.

Controls Temperature

■ Mercoid Corp., 4201 Belmont avenue, Chicago, has devised a two-stage thermostat suitable for room temperature control on gas or oil burners, for eliminating overshooting temperatures on stokers with forced circulating warm air systems, and for regulating two-speed



fans in air conditioning applications.

Instrument is equipped with two dustproof sealed mercury contact switches, operated by means of bimetal coil and two permanent magnets. Maximum capacity of each circuit of thermostat is 9/10 ampere at 24 volts or less.

Gear Measuring Blocks Provide Accurate Check

■ Illinois Tool Works, 2501 North Keeler avenue, Chicago, has announced development of gear measuring blocks, used in conjunction with micrometers to provide a simple and accurate means of checking pitch diameter and tooth thickness of spur or helical gears of either involute or stub tooth systems.

Each set consists of three blocks, two male and one female, and is constructed for a specific pitch and pressure angle. Two male blocks are used for gears having an even number of teeth, and the combination of one male and one female for gears with an odd number of teeth. Readings are reliable because the blocks check while contacting one certain part of the involute, the line of action.

Measurements are made quickly and the mathematical formula used is simple and easily understood. If the micrometer anvils are seated squarely on the flat top surface of the blocks, all requirements for an accurate reading are fulfilled.

Grinders Adaptable To Precision Work

■ Van Dorn Electric Tool Co., Towson, Md., has developed two new high speed die grinders, Nos. 7 and 12, to meet demand for light weight, compact tools of maximum power.

These grinders are especially adaptable to precision grinding in die shops, metal working plants and tool rooms, and can be used on metals, composition materials, wood and stone. Both tools are equipped with universal motors. Single purpose, ¼-inch chuck will accommodate wheels, pencil stones, rotary files and burrs. Spindle housings are steel with bearings mounted at extreme ends to absorb radial load.

Both grinders have a no-load

speed of 19,000 and a full-load speed of 12,000 revolutions per minute. Chief difference between models is size; No. 7 weighs 2½ pounds and is 9 inches long; No. 12 weighs 4 pounds and is 14½ inches in length. The smaller model will take wheels up to 2-inch diameter and the larger grinder can be used with 2½-inch wheels.

Relays Give Low Voltage Protection

■ Ward Leonard Electric Co., Mt. Vernon, N. Y., has placed on the market a line of open type midget relays, alternating or direct current, which can be equipped with single or double pole and single or double throw contacts.

With either two or three wire control, magnet coil may be energized either from main line circuit or from an independent circuit. With two-wire control a single pole switch or equivalent device is required. Low voltage release is obtained with this arrangement. Should line voltage fail or drop to a low value, relay will open and remain open until normal voltage is restored. Three-wire instrument control requires a single pole double throw momentary contact switch.

Standard features of these relays include: continuous duty, low power consumption coil; silver-to-silver, self-cleaning and self-aligning contacts; cadmium plated metal parts, except contacts; molded insulating base.

Coal Washery For Moderate Tonnage

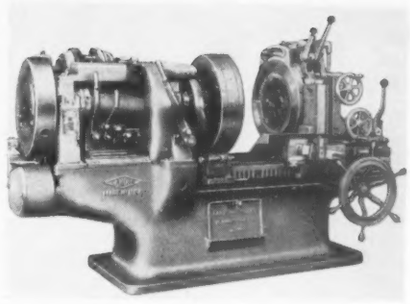
■ Link-Belt Co., 307 North Michigan avenue, Chicago, has announced addition of a junior model to its line of coal washeries.

This is a two-cell unit, embodying basic features of larger models built by same company. It is designed to meet need for equipment for cleaning sized coal, ⅜-inch to 6-inch, at rate of 20 to 50 tons per hour. This washery is recommended for the producer of moderate tonnages, or the operator who now employs tippel preparation and needs to clean one or more additional sizes.

Threading Unit Has Receding Chaser

■ Landis Machine Co., Waynesboro, Pa., has added to its line a threading and cutting machine with receding chaser die head, having a capacity from 1 5/8 to 4¾-inch outside diameter.

Machine will generate a tapered



pipe thread of any length up to 5 inches and will cut all tapers regularly used for plain pipe. Receding chaser feature reduces cutting strain and permits use of a narrow chaser.

Die head has a universal adjustment for size, and is equipped with a micrometer adjustment for extremely accurate setting. Both roughing and finishing cuts can be made without any diametrical adjustment of the head. Taper is controlled by a sine-bar which is adjusted easily for all tapers. Forward travel of die head is controlled by a reversible leadscrew, located centrally between guides of the machine.

Various feeding speeds required are obtained by means of pitch change gears housed in a gearbox at headstock end of machine.

Prevents Silicosis

■ American Optical Co., Southbridge, Mass., has developed a respirator designed to prevent silicosis among workers engaged in mining, tunneling, drilling, quarrying and processing of mineral products containing silica.

Respirator is intended to provide

maximum comfort so that workers will not object to wearing it. Facial adjustment is unnecessary. Compactness, light weight and improved valves which ease inhalation and exhalation add to comfort. Respirator has a large effective filter area of 42 square inches. It has been approved by the United States bureau of mines.

Electrode Holder Has Adjustable Tension

■ Tweco Products Co., Wichita, Kan., has added to its welding line a new electrode holder, featuring a completely insulated spring tensioning member.

Spring tension is adjustable to suit strength of the operator or size of electrode. Copper holder jaws are grooved and have a positive angular position electrode lock from which the rod cannot fall out of position. The handle grip, guard and trigger are shockproof. Holders are cadmium plated to prevent rust and minimize spatter pickup and corrosion.

Provides Definite Time Acceleration

■ Cutler-Hammer Inc., Twelfth & St. Paul avenue, Milwaukee, has introduced a line of direct current machine tool controllers for heavy duty applications below 10 horsepower and for general purpose above 10 horsepower.

A timing device which operates magnetically provides positive time acceleration, unaffected by load, temperature or other working conditions. Once adjusted to obtain desired starting period, controller will always accelerate in this same time.

Controller is housed in new style case with snap-on cover. A tilting panel frame allows quick access to rear of panel. These controllers include non-reverse and reversing types, with and without dynamic braking, for both constant speed and variable speed motors. They are available for use with either pushbutton or drum type master switch, and in all standard ratings up to 75 horsepower, 115 volts; and 150 horsepower, 230 and 550 volts.

Has Unbreakable Lens

■ Bright Star Battery Co., Clifton, N. J., has placed on the market a rugged industrial flashlight for use in mining, electrical work, public service and field work where rough handling is common.

Flashlight is made of plastic material and is unaffected by oil, grease, water or the corrosive action of exhausted batteries. Its lens is unbreakable, and bulb is protected by a shock absorber. Corrugated ribbing of the case provides a firm

grip, and switch button is large enough to be operated easily with a gloved hand.

Grinder Uses High Speed Wheels

■ Hammond Machinery Builders Inc., Kalamazoo, Mich., has placed on the market a grinder designed primarily for use with high speed wheels.

Spindle speed of this machine is widely variable, permitting an efficient surface speed regardless of wheel size. Wheels can be used down to wheel flanges, making it necessary to throw away only a small stub. Speed changes are effected quickly, and wheels cannot be overspeeded. It is unnecessary to disturb the main spindle or bearings when replacing belts. This grinder is built to withstand extra strain exerted upon it by high speeds.

Machine will handle wheels with 18 to 30-inch diameters, and may be operated by motors having from 10 to 25 horsepower. Although designed especially for high speed wheels, grinder is equally suitable for vitrified wheels.

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Compressors Have Light-Weight Mountings

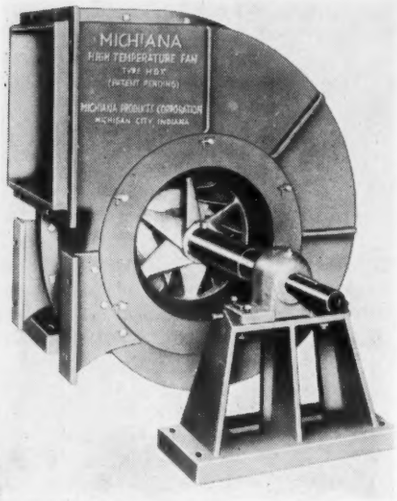
■ Ingersoll-Rand Co., Phillipsburg, N. J., has added to its line of portable air-cooled compressors three light-weight models, delivering 35, 85 and 105 cubic feet of air per minute, respectively.

Two largest models incorporate a two-stage, air-cooled compressor and are furnished with either gasoline or oil engine. Smallest compressor is single-stage and is driven by a gasoline engine.

Compressor mountings are light-weight, with rigid construction throughout, permitting towing at speeds up to 35 miles per hour. Wheels are furnished with either pneumatic or solid rubber tires.

Fans Operate at High Temperatures

■ Michiana Products Corp., Michigan City, Ind., has developed a line of industrial fans for high temperature application, such as handling hot gases of products of combustion in heat conservation systems, for annealing, hardening, galvanizing, tin plating and other types of furnaces.



These fans are constructed of heat-resisting alloys and embody a novel design. They are capable of operating at temperatures up to limit of alloys used in construction, or about 1800 degrees Fahr.

Controls Planer Motor

■ General Electric Co., Schenectady, N. Y., has introduced a limit switch designed to control intermittent operation of feed motors

on planers, plate planers, tool grinders and other machines where an intermittent feed or index function is regularly repeated.

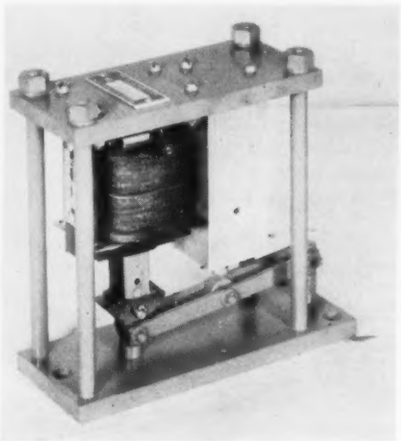
Switch consists of a drive shaft connected to feed mechanism; an indexing means for setting amount of feed to be obtained at each individual operation; and a resetting mechanism for automatically bringing switch to zero position after each individual operation has been completed. Drive shaft operates switch through magnetic clutch.

Device is furnished in a cast aluminum case, measuring 4⅞ x 5 13/16 x 6 3/16 inches.

Solenoid Actuates Valve

■ C. B. Hunt & Son, Salem, O., have placed on the market a control valve for operation of air cylinders of diameters not over 3 inches with correspondingly short strokes.

Valve is suitable for air pressure up to 200 pounds, operating on General Electric solenoid with low amperage characteristics. In valving principle employed there is no metal-to-metal contact. Stainless steel plunger is only moving part in the valving unit. There is no leakage; increase in air pressure tends only to tighten the air seal. Valve is furnished for two-way and three-way operations, either normally closed or normally opened. It is available only in the ⅛-inch I.P.T. size.



Saw Has Two Triggers

■ Stanley Electric Tool division, Stanley Works, New Britain, Conn., has added to its line a lightweight electric handsaw designed for heavy duty continuous operation and fast cutting.

It has a 6-inch blade and cuts to a depth of 1⅞ inches. A duplex handle, with two triggers, makes saw easy to handle in any position. Only one adjustment is necessary to regulate depth of cut. Saw is fully equipped with safety features approved by insurance companies and industrial commissions.

Cutting Device Has Varied Application

■ Compressed Industrial Gases Inc., 221 North LaSalle street, Chicago, has added to its line an automatic flame cutting machine, known as the Gas-O-Graph, which will cut auy type of metal within a range of 30 inches in width and unlimited length.

Cuts made by this machine are clean and accurate, and machining seldom is required. Cutting can be done from a tracing, template or pattern, and more than one torch can be used when multiple cuts are desired. Machines to cut wider than 30 inches are available by special order.

Completely assembled unit weighs approximately 100 pounds and may be carried by one man when unassembled. Machine can be assembled by a single operator and ready

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for operation in five minutes. If desired, cutter may be installed as a stationary and permanent unit through use of special table. Portable feature, however, effects substantial economies, because machine can be taken to part to be cut, avoiding necessity of moving cumbersome pieces of metal.

Grinds Sole Plates

■ Excelsior Tool & Machine Co., Ridge avenue, East St. Louis, Ill., has placed on the market an automatic twin spindle electric sole plate grinding and polishing machine, which can be used for other grinding and polishing operations within its capacity.

The grinding operation removes scale and sufficient metal to obtain a clean, smooth, straight surface on sole plates. High speed, hard center grinding wheels are used the full width. Oscillating motion of carriage prevents straight line scratches and unequal wear to faces of grinding and polishing wheels.

Approximately 200 castings are ground and finished per hour. Carriage travel is 30 feet per minute. Spindle speed is 2500 revolutions per minute for 14-inch grinding wheels, and 15-horsepower motor turns at 1750 revolutions per minute.

Contamination of Castings Prevented

■ Tamms Silica Co., 228 North LaSalle street, Chicago, has developed a set of three skimmers designed to eliminate contamination of castings in the foundry.

These scientifically designed skimmers are made of high heat resisting alloys and will not cause impurities in high temperature, non-ferrous metals brought about by skimmer disintegration. They are not affected by chemical action of alloy or flux.

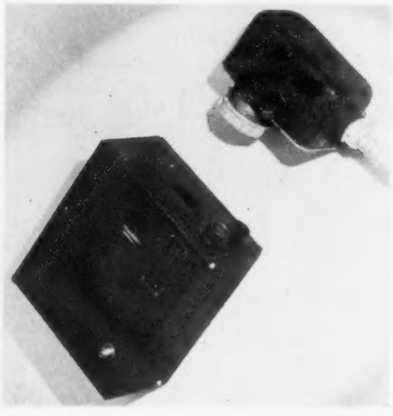
Control Unit Is Photoelectric

■ United Electronic Industries Inc., 37 Rawson street, Long Island City, N. Y., has produced a photoelectric relay, complete with light source, designed to serve as a general purpose control in many industrial applications.

Unit operates on 110-volt, 60-cycle alternating current. Internal telephone type relay contacts carry a load of 2 amperes, 110 volts, 60 cycles, alternating current, non-inductive. Relay requires a minimum of 3 foot-candles on photocell, and impulses between each operation must be at least 1/20 second. Control has one amplifier tube and one photocell.

Light source furnished with equipment has a 32-candlepower bulb and will operate control at 25 feet. It is supplied with a 2-inch focal length lens. Light beam may enter two sides of the box; special knockouts are provided.

This relay, known as Model 50, lists for $24.75, complete with light source, F.O.B., Long Island City.



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MATERIALS HANDLING EQUIPMENT

Strip Mill

(*Concluded from Page* 47)

Operation of trucks is directed by the head of the particular department they serve and each truck covers a specific route which varies with operating conditions. The seven ram trucks are electrically driven from storage batteries.

Five trucks are non-tilting type with 15,000-pound capacity, 72-inch ram and four-wheel drive and steering. One other non-tilting type truck has a capacity of 8000 pounds with front wheel drive and rear wheel steering. There also is one tilting type ram truck of 6000 pounds capacity with a 32-inch ram that will lower to within 12 inches of the floor and will tilt forward 5 degrees and backward 20 degrees. All ram trucks are equipped with solid rubber tires.

Fig. 11—Coils roll down inclined track against stop which positions them for the ram trucks as shown here

Quick Battery Change

An interesting feature of truck maintenance is the speed with which batteries may be changed. This is made possible by the type of battery and arrangement of battery recharging room. Spare batteries are recharged and serviced in a straight line under an electric traveling hoist. A truck is driven into a space provided in the recharging line. Spreader arms on the hoist grip under lips on the steel battery case, lifting out the spent battery which is placed at the far end of the recharging line. A recharged battery then is picked up by the hoist and lowered into battery compartment of the truck. Entire operation requires only three or four minutes and the truck again is ready for approximately eight hours of service.

All ram truck and tractor operators are given instructions by their foreman as to proper operations of their machine to prevent overloading and damage to materials and equipment. In addition, special safety instructions are given these operators in safety meetings and by their foreman to prevent possible injury to the operator or other workmen through improper handling.

Tractor, trailer and cranes also are used in the cold mill for handling sheets between various finishing units. Two overhead electric cranes of 15-ton capacity serve the finishing department and two of the same capacity serve the cold mill shipping department. In galvanizing department, the 15-ton crane is used to deliver sheets from pickling vats to galvanizing unit. Tractors and trailers carry galvanized sheets to additional finishing and shipping operations.

Thus cranes, conveyors, ram trucks, tractors, trailers and special racks and grabs are all fitted into a co-ordinated system, each class of equipment serving where it is best adapted by individual conditions.

♦

Lacquer Reveals Cracks

■ Manufacturer of a heavy tractor uses a frame made from a large steel casting which has several openings or wells. These wells, the cored interior of the frame and also the interior of other large castings are now sprayed with a white lacquer which is lighter in color than the former red lead finish. This increases visibility of these interiors and makes it easier to work on them.

An important advantage is that cracks and imperfections formerly covered up by the red lead finish and not found until the casting failed in service now are discovered before machining as the lacquer reveals them clearly.

Gas Boiler Solves Summer Heat Problem

■ Confronted with necessity of finding a source of steam during the shutdown of its heating plant for the summer months, E. J. McLeer & Co., Philadelphia, recently installed a small gas-fired boiler which furnishes steam used for cleaning oily metal sheets before painting for assembly. The installation was made with the co-operation of Industrial division of Philadelphia Gas Works Co.

Keeps Out Dust

■ Recommended for installation in locations subject to dust, grime and smoke, a new line of hinged dust-tight glass covers for industrial lamps has been introduced by Benjamin Electric Mfg. Co., Des Plaines, Ill.

Entire cover assembly consists of only two parts, the cover proper including glass and gasket and the band with hinge which clamps to reflector bead. Hinged type construction gives quicker access to reflector interior and eliminates danger of dropping glass.

Covers are available for reflectors in diameters from 8 to 22 inches, and are supplied in plain clear, daylight, or impact-resisting glass.

Torch Aids in Paint Removal

■ ALTHOUGH some painted surfaces are simply sanded or brushed down in preparation for a new coat, the presence of cracks, chips or air holes often makes it desirable to remove the old paint entirely to leave the surface of the base material clean and smooth for repainting. An interesting method is detailed by The Linde Air Products Co. in *Oxy-Acetylene Tips*. The old paint is softened with a burner and then easily removed with a putty knife or scraper. The more coats of old paint, the better the paint burner works.

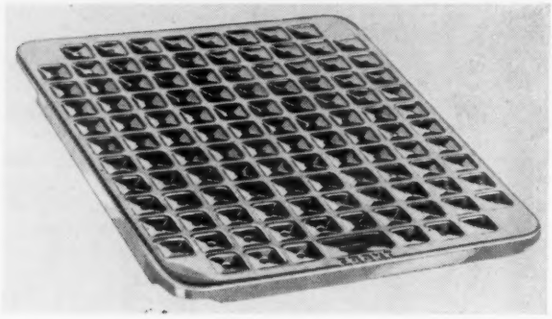
Paint burner consists of an air-acetylene torch equipped with a flat head which spreads the flame out to a width of 3 inches. By simply changing the angle at which the torch handle is held, width of flame application on the work surface can be varied from ½ to 3 inches.

No Scorching

This makes it possible, when working on uneven surfaces, to remove paint from grooves without scorching adjacent surfaces. A needle valve on the handle provides quick adjustment of flame length from 1/16 to ¼-inch, according to volume of heat required. Flame is under direct control of the operator at all times and can easily be directed in places ordinarily difficult to reach. The flame of an air-acetylene burner is free from soot and smoke. It is not easily blown out by the wind. It has a high, even temperature throughout and there is practically no low-temperature flame surrounding a high-temperature center, hence the heat is applied evenly over the entire flame area.

Quickly removes old paint, obtaining a smooth surface that needs no further preparation before applying new paint

Oven Efficiency Is Increased



■ Broiler grill made from Apollo Chrom-Steel, a prefinished steel sheet produced by Apollo Metal Works, 66th place & So. Oak Park avenue, Chicago.

Political Influence On German Steel

Gemeinfassliche Darstellung des Eisenhuttenwesens, by German Iron and Steel institute; fourteenth edition; supplied by STEEL, Cleveland; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

■ It is evident that a great demand has existed and still exists for this book, written in German, a popular treatise on iron and steel. Its first edition appeared in 1889, and now is in the fourteenth edition. No authors are named; the book is the result of the efforts of the staff of the German Iron and Steel institute. It furnishes good reading not only for the layman, but also for the young engineer and for the economist.

Everything is described, from the history of iron through all existing manufacturing processes for making products of iron and steel, to materials testing and equipment of iron and steel works. This part covers 240 pages of 7 x 10 inches, with 124 illustrations. Then follow over 300 pages of economic statistics, history of the German iron and steel industry, and sociological problems. Those who are thoroughly familiar with the technical part and might be bored by it, will enjoy the pages dealing with the economic problems.

The German iron and steel industry had to adapt itself several times to revolutionary changes in supplies of raw material, to changing frontiers and to changing tariff conditions. It also had to adapt itself to changing policies of government, and to the dictates of the treaty of Versailles.

While all this is interesting history, it does not begin to compare in interest with the events in the iron and steel industry since the beginning of the Hitler regime. To those who wish to obtain first-hand information on present-day conditions in the German iron and steel industry, the book can be sincerely recommended.

Wages Analyzed

Differentials in Industrial Wages and Hours in the United States, by National Industrial Conference Board Inc.; cloth, 203 pages, 6 x 9 inches; supplied by STEEL, Cleveland, for $3.50; in Europe by Penton Publishing Co. Ltd., Caxton House, Westminster, London.

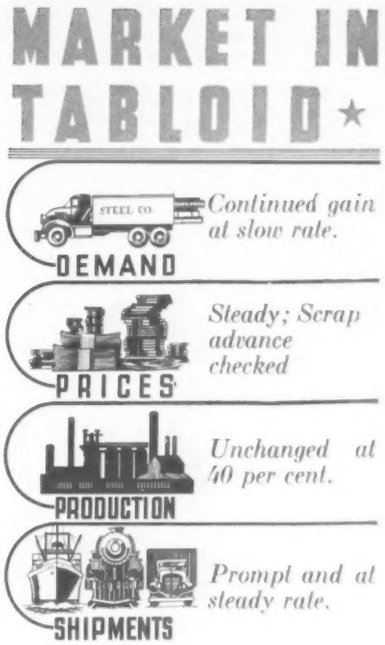
Comprehensive information is provided in this volume on existing differences in wages and hours of work of wage earners employed in identical occupations.

Detailed data, presented in 180 tables, show average hourly and weekly earnings received by male and female workers in different regions and states, in communities of different sizes and in large and small plants. Supplementary information on differences in living costs indicates the extent to which lower wages are, or are not, offset by lower prices for housing, food and other costs.

Separate figures are given for individual occupations in eight industries, foundries and machine shops, furniture, lumber, cotton textile, printing, electricity, gas and paper and pulp.

Steel Market Pauses In Forward Movement

Wide Range of Buying Shows Steel Need; Scrap Steady



■ CONDITIONS in the steel industry continue to show improvement at a slow rate. The comparatively sharp rise of recent weeks has been checked, but this is considered as a corrective measure.

With Labor day only three weeks away many observers are setting that date as the starting point of the substantial improvement that has been looked forward to for months. General conditions point strongly in that direction and production of 1939 model automobiles seems likely to require large tonnages of steel during September.

August bookings have been at a better rate than in July and that in turn exceeded the June rate, though each rise was small. Sellers find buying is from widely diversified sources, indicating a general increase in needs of consumers. This applies to all classes of steel, with the possible exception of those used by railroads. The latter continue to remain out of the market, except for the New York Central, which plans to buy 28,600 tons of rails and do considerable car repair work.

About 15,000 tons of oil line pipe for a Wyoming company was divided between two leading producers. Numerous bridge and waterpower projects are developing tonnages of structural steel as work progresses. Government work plans are being advanced with unusual speed to give early employment and considerable steel buying will result within a short time. In several states recent elections have authorized bond issues for bridges, waterworks and similar projects on which bids will be asked this month.

Sharp recent advances in scrap have carried prices to a level where readjustment seems necessary and easing is apparent in some centers. Higher prices have brought out increasingly large supplies at some points, dampening the situation somewhat. As an offset to this it is believed a number of large consumers have relatively small stocks and will be forced to buy when steelmaking rates have risen further. Prices are holding well in most cases but the advance has been checked.

National rate of operation last week held at 40 per cent of capacity, in spite of loss of 3 points at Pittsburgh and 4.5 points at Chicago. Consistently increased rates at nearly all other centers served to balance these declines. Detroit gained 14 points to 52 per cent, Cleveland 3 points to 41, Youngstown 3 points to 43, Cincinnati 7 points to 65, New England 5 points to 40, Buffalo 2.5 points to 42 and eastern Pennsylvania 1 point to 30. Wheeling was unchanged at 54 per cent, Birmingham at 50 and St. Louis at 30. The 3-point loss at Pittsburgh brought the rate to 30 per cent and the 4.5 decline at Chicago resulted in 33.5 per cent.

Change to new models continues to hold automobile production to low levels, last week accounting for 13,790 units, compared with 14,771 the preceding week. General Motors made 9800 compared with 10,800 the previous week. Chrysler assembled 1100 compared with 800 and Ford was idle, with no production. All other makers made a total of 2890 cars, compared with 2596 the week before.

Finished steel shipments by the United States Steel Corp. in July were 441,570 tons, 7.6 per cent lower than in June at 478,057 tons and comparing with 1,186,752 tons in July last year. For seven months shipments this year total 3,451,924 tons, compared with 8,801,026 tons in the same period last year.

Steel ingot production in July was 1,982,058 gross tons, compared with 1,638,277 tons in June, an increase of 21 per cent. Weekly production in July was 448,429 tons, compared with 381,883 tons in June. July production was nearly 57 per cent lower than in July, 1937, at 4,556,304 tons.

Slight adjustment in prices of steelmaking scrap after the recent rapid advance resulted in the composite price dropping 5 cents, to $14.58. This is significant only of the rapid pace at which prices had been advancing over the past month or more. The iron and steel composite is 2 cents higher at $36.51 and the finished steel composite is unchanged at $57.20.

World conditions show little change, Great Britain's markets being depressed, five blast furnaces being blown out. Italy will join the international wire syndictate. South Africa is considering anti dumping duties against steel products from the United States.

COMPOSITE MARKET AVERAGES

	Aug. 13	Aug. 6	July 30	One Month Ago July, 1938	Three Months Ago May, 1938	One Year Ago Aug., 1937	Five Years Ago Aug., 1933
Iron and Steel	$36.51	$36.49	$36.43	$36.32	$38.50	$40.34	$29.92
Finished Steel	57.20	57.20	57.20	57.20	61.70	61.70	47.50
Steelworks Scrap..	14.58	14.63	14.08	13.06	11.47	20.41	11.57

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Aug. 13, 1938	July 1938	May 1938	Aug. 1937
Steel bars, Pittsburgh	2.25c	2.25c	2.45c	2.45c
Steel bars, Chicago	2.25	2.25	2.50	2.50
Steel bars, Philadelphia	2.57	2.57	2.77	2.76
Iron bars, Terre Haute, Ind.	2.15	2.15	2.35	2.35
Shapes, Pittsburgh	2.10	2.10	2.25	2.25
Shapes, Philadelphia	2.215	2.215	2.40	2.455
Shapes, Chicago	2.10	2.10	2.30	2.30
Plates, Pittsburgh	2.10	2.10	2.25	2.25
Plates, Philadelphia	2.15	2.295	2.41	2.435
Plates, Chicago	2.10	2.10	2.30	2.30
Sheets, hot rolled, Pittsburgh	2.15	2.15	2.40	2.40
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.45	3.15
Sheets, No. 24, galv., Pittsburgh	3.50	3.50	3.80	3.80
Sheets, hot rolled, Gary	2.15	2.15	2.50	2.50
Sheets, cold-rolled, Gary	3.20	3.20	3.25	3.25
Sheets, No. 24, galv., Gary	3.50	3.50	3.90	3.90
Bright bess., basic wire, Pitts.	2.60	2.60	2.90	2.90
Tin plate, per base box, Pitts.	$5.35	$5.35	$5.35	$5.35
Wire nails, Pittsburgh	2.45	2.45	2.75	2.75

Semifinished Material

Sheet bars, open-hearth, Youngs.	$34.00	$34.00	$37.00	$37.00
Sheet bars, open-hearth, Pitts.	34.00	34.00	37.00	37.00
Rerolling billets, Pittsburgh	34.00	34.00	37.00	37.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	43.00	43.00	47.00	47.00

Pig Iron

	Aug. 13, 1938	July 1938	May 1938	Aug. 1937
Bessemer, del. Pittsburgh	$21.34	$21.34	$25.34	$25.26
Basic, Valley	19.50	19.50	23.50	23.50
Basic, eastern, del. Philadelphia	21.34	21.34	25.34	25.26
No. 2 foundry, Pittsburgh	21.21	21.21	25.21	25.21
No. 2 foundry, Chicago	20.00	20.00	24.00	24.00
Southern No. 2, Birmingham	16.38	16.38	20.38	20.38
Southern No. 2, del. Cincinnati	19.89	19.89	23.89	23.69
No. 2X eastern, del. Philadelphia	22.215	22.215	26.215	26.135
Malleable Valley	20.00	20.00	24.00	24.00
Malleable, Chicago	20.00	20.00	24.00	24.00
Lake Sup., charcoal, del. Chicago	28.34	28.34	30.34	30.04
Gray forge, del. Pittsburgh	20.17	20.17	24.17	24.17
Ferromanganese, del. Pittsburgh	97.77	97.77	107.77	107.29

Scrap

Heavy melting steel, Pittsburgh	$15.25	$12.05	$11.55	$21.85
Heavy melt. steel, No. 2, E. Pa.	13.00	12.20	10.00	18.00
Heavy melting steel, Chicago	14.25	12.05	11.05	19.75
Rails for rolling, Chicago	18.75	17.05	14.85	21.75
Railroad steel specialties, Chicago	16.75	14.95	13.60	22.25

Coke

Connellsville, furnace, ovens	$3.75	$3.75	$4.25	$4.50
Connellsville, foundry, ovens	5.00	5.00	5.25	5.30
Chicago, by-product fdry., del.	10.50	10.80	11.00	11.00

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Hot Rolled

Pittsburgh, Gary	2.15c
Chicago, delivered	2.18c
Cleveland	2.15c
Detroit, del.	2.25c
Buffalo	2.15c
Sparrows Point, Md.	2.15c
New York, del.	2.39c
Philadelphia, del.	2.32c
Granite City, Ill.	2.25c
Middletown	2.15c
Youngstown	2.15c
Birmingham	2.15c
Pacific Coast points	2.65c

Cold Rolled

Pittsburgh, Gary	3.20c
Chicago, delivered	3.23c
Buffalo	3.20c
Cleveland	3.20c
Detroit, delivered	3.30c
Philadelphia, del.	3.52c
New York, del.	3.54c
Granite City, Ill.	3.30c
Middletown	3.20c
Youngstown	3.20c
Pacific Coast points	3.80c

Galvanized No. 24

Pittsburgh, Gary	3.50c
Chicago, delivered	3.53c
Buffalo	3.50c
Sparrows Point, Md.	3.50c
Philadelphia, del.	3.67c
New York, delivered	3.74c
Birmingham	3.50c
Granite City, Ill.	3.60c
Middletown	3.50c
Youngstown	3.50c
Pacific Coast points	4.00c

Tin Mill Black No. 29

Pittsburgh	3.15c
Gary	3.15c
Granite City, Ill.	3.25c

Long Ternes No. 24 Unassorted

Pittsburgh, Gary	3.95c
Pacific Coast	4.65c

Enameling Sheets

	No. 10	No. 20
Pittsburgh	2.75c	3.35c
Gary	2.75c	3.35c
Granite City, Ill.	2.85c	3.45c
Youngstown	2.75c	3.35c
Cleveland	2.75c	3.35c
Middletown	2.75c	3.35c
Pacific Coast	3.35c	3.95c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.10c
New York, del.	2.29c
Philadelphia, del.	2.15c
Boston, delivered	2.42c
Buffalo, delivered	2.33c
Chicago or Gary	2.10c
Cleveland	2.10c
Birmingham	2.10c
Coatesville, base	2.10c
Sparrows Point, base	2.10c
Claymont, Del.	2.10c
Youngstown	2.10c
Gulf ports	2.45c
Pacific Coast points	2.60c

Steel Floor Plates

Chicago	3.35c
Gulf ports	3.70c
Pacific Coast ports	3.95c
Pittsburgh	3.35c

Standard Shapes

Pittsburgh	2.10c
Philadelphia, del.	2.21½c
New York, del.	2.27c
Boston, delivered	2.41c
Bethlehem	2.10c
Chicago	2.10c
Cleveland, del.	2.30c
Buffalo	2.10c
Gulf ports	2.45c
Birmingham	2.10c
St. Louis, del.	2.34c
Pacific Coast points	2.70c

Tin and Terne Plate

Tin plate, coke (base box) Pittsburgh, Gary	$5.35
Granite City	5.45
Mfg. terne plate, Pittsburgh, Gary	4.65c
Granite City	4.75c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.25c
Chicago or Gary	2.25c
Duluth	2.35c
Birmingham	2.25c
Cleveland	2.25c
Buffalo	2.25c
Detroit, delivered	2.35c
Philadelphia, del.	2.57c
Boston, delivered	2.62c
New York, del.	2.59c
Gulf ports	2.60c
Pacific Coast points	2.85c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.10c
Chicago or Gary	2.10c
Detroit, delivered	2.20c
Cleveland	2.10c

Buffalo	2.10c
Birmingham	2.10c
Gulf ports	2.45c
Pacific coast points	2.70c

Iron

Terre Haute, Ind.	2.15c
Chicago	2.15c
Philadelphia	2.47c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.05c
Chicago, Gary, Buffalo, Cleve., Birm., Young., Sparrows Pt.	2.05c
Detroit, delivered	2.15c
Gulf ports	2.40c
Pacific coast ports, f.o.b. car docks	2.50c
Philadelphia, del.	2.22c

Rail steel, straight lengths, quoted by distributors

Pittsburgh, Gary, Chicago, Buffalo, Cleveland, Birmingham	1.90c
Detroit, delivered	2.00c
Gulf ports	2.25c
Pacific Coast	2.35c

Wire Products

Pitts.-Cleve.-Chicago-Birm. base per 100 lb. keg in carloads

Standard wire nails	$2.45
Cement coated nails	$2.45

(Per pound)

Polished staples	3.15c
Galv. fence staples	3.40c
Barbed wire, galv.	3.20c
Annealed fence wire	2.95c
Galv. fence wire	3.35c
Woven wire fencing (base C. L. column)	67.00
Single loop bale ties, (base C. L. column)	56.00

To Manufacturing Trade

Base, Pitts.-Cleve.-Chicago-Birmingham (except spring wire)

Bright bess., basic wire	2.60c
Galvanized wire	2.65c
Spring wire	3.20c

Worcester, Mass., $2 higher on bright basic and spring wire.

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60

Cold-Finished Bars

	Carbon	Alloy
Pittsburgh	2.70c	3.40c
Chicago	2.70c	3.40c
Gary, Ind.	2.70c	3.40c
Detroit	2.75c	*3.50c
Cleveland	2.70c	3.40c
Buffalo	2.70c	3.40c

*Delivered.

Alloy Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem	2.80c
Detroit, delivered	2.90c

S.A.E.	Alloy Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70
2100	0.75	3200	1.35
2300	1.55	3300	3.80
2500	2.25	3400	3.20

4100 0.15 to 0.25 Mo. 0.55
4600 0.20 to 0.30 Mo. 1.50-2.00 Ni. 1.10
5100 0.80-1.10 Cr. 0.45
5100 Cr. spring flats 0.15
6100 bars 1.20
6100 spring flats 0.85
Cr. N., Van. 1.50
Carbon Van. 0.85
9200 spring flats 0.15
9200 spring rounds, squares 0.40
Electric furnace up 50 cents.

Piling

Pittsburgh	2.40c
Chicago, Buffalo	2.40c
Gulf ports	2.75c

Strip and Hoops

(Base, hot-rolled, 1 to 25 tons; cold-rolled, 3 to 25 tons)

Hot strip to 23/8-in.

Pittsburgh, Chicago, Gary, Cleveland Youngstown, Middletown Birmingham	2.15c
Detroit, del.	2.25c
Philadelphia, del.	2.47c
New York, del.	2.51c
Cooperage hoop, Pittsburgh, Chicago	2.25c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland, Youngstown	2.95c
Chicago	3.05c
Detroit, del.	3.05c
Worcester, Mass.	3.15c

Carbon	Cleve. Pitts.
0.26—0.50	2.95c
0.51—0.75	4.30c
0.76—1.00	6.15c
Over 1.00	8.35c

Worcester, Mass., $4 higher.

Commodity Cold-Rolled Strip

Pitts.-Cleve.-Youngstown	3.10c
Detroit, del.	3.20c
Worcester, Mass.	3.50c

Lamp stock up 10 cents.

Rails, Fastenings

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pitts., Chicago, B'ham.	$40.00
Do., rerolling quality	39.00
Angle bars, billet, mills	2.80c
Do., axle steel	2.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Car axles forged, Pitts., Chgo., B'ham.	3.15c
Tie plates, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists, carloads 5% up; full containers additional 10%.

Carriage and Machine

½ x 6 and smaller	65-5-5 off
Do. larger, to 1-in.	60-10-5 off
Do. 1¼ and larger	60-5-5 off
Tire bolts	50-5 off

Stove Bolts

In packages with nuts attached 70-5 off; in packages with nuts separate 70-10-5 off; in bulk 80-5 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5-5 off
Elevator bolts	50-10-5-5 off

Plow Bolts

All sizes	65-5-5 off

Nuts

Semifinished hex.; ½-in. and smaller	60-10-5 off
Do., ⅝ to 1-inch	60-5-5 off
Do., over 1-inch	60-5 off

Hexagon Cap Screws

Milled	50-10-5 off
Upset, 1-in. smaller	70-10-10 off

Square Head Set Screws

Upset, 1-in., smaller	80-5 off
Headless set screws	75 off

Rivets, Washers

Structural, Pittsburgh, Cleveland	3.40c
Structural, Chicago	3.40c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-10 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75	off
Do., less carloads, 5 kegs or more, no discount on any extras	$3.90
Do., under 5 kegs no disc. on any extras	$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe. Pitts., Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld

Steel

In.	Blk.	Galv.
⅛	63½	54
¼	66½	58
1—3	68½	60½

Iron

¼	30	13
1—1¼	34	19
1½	38	21½
2	37½	21

Lap Weld

Steel

2	61	52½
2½—3	64	55½
3½—6	66	57½
7 and 8	65	55½
9 and 10	64½	55
11 and 12	63½	54

Iron

2	30½	15
2½—3½	31½	17½
4	33½	21
4½—8	32½	20
9—12	28½	15

Line Pipe

Steel

1 to 3, butt weld	67½	
2, lap weld	60	
2½ to 3, lap weld	63	
3½ to 6, lap weld	65	
7 and 8, lap weld	64	
10-inch lap weld	63½	
12-inch, lap weld	62½	

Iron

	Blk.	Galv.
¼ butt weld	25	7
1 and 1¼ butt weld	29	13
1½ butt weld	33	15½
2 butt weld	32½	15
1½ lap weld	23½	7
2 lap weld	25½	9
2½ to 3½ lap weld	26½	11½
4 lap weld	28½	15
4½ to 8 lap weld	27½	14
9 to 12 lap weld	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Welded

Sizes	Gage	Steel	Charcoal Iron
1½" O. D.	13	$ 9.72	$23.71
1¾" O. D.	13	11.06	22.93
2" O. D.	13	12.38	19.35
2¼" O. D.	13	13.79	21.68
2¼" O. D.	12	15.16	.....
2½" O. D.	12	16.58	26.57
2¾" O. D.	12	17.54	29.00
3" O. D.	12	18.35	31.36
3½" O. D.	11	23.15	39.81
4" O. D.	10	28.66	49.90
5" O. D.	9	44.25	73.93
6" O. D.	7	68.14	.....

Seamless

Sizes	Gage	Hot Rolled	Cold Drawn
1" O. D.	13	$ 7.82	$ 9.01
1¼" O. D.	13	9.26	10.67
1½" O. D.	13	10.23	11.79
1¾" O. D.	13	11.64	13.42
2" O. D.	13	13.04	15.03
2¼" O. D.	13	14.54	16.76
2¼" O. D.	12	16.01	18.45
2½" O. D.	12	17.54	20.21
2¾" O. D.	12	18.59	21.42
3" O. D.	12	19.50	22.48
3½" O. D.	11	24.62	28.37
4" O. D.	10	30.54	35.20
4½" O. D.	10	37.35	43.04
5" O. D.	9	46.87	54.01
6" O. D.	7	71.96	82.93

Cast Iron Pipe

Class B Pipe—Per Net Ton

6-in., & over, Birm.	$42.00-43.00
4-in., Birmingham	45.00-46.00
4-in., Chicago	53.80-54.80
6-in. & over, Chicago	50.80-51.80
6-in. & over, east fdy.	46.00
Do., 4-in.	49.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Rerolling Billets, Slabs

(Gross Tons)

Pittsburgh, Chicago, Gary, Cleve., Buffalo, Young., Birm., Sparrows Point	$34.00
Duluth (billets)	36.00
Detroit, delivered	36.00

Forging Quality Billets

6 x 6 to 9 x 9-in., base

Pitts., Chicago, Buffalo	40.00
Duluth	42.00

Sheet Bars

Pitts., Cleveland, Young., Sparrows Point, Buffalo, Canton, Chicago	34.00
Detroit, delivered	36.00

Wire Rods

Pitts., Cleveland, Chicago, Birmingham No. 5 to 9/32-inch incl.	43.00
Do., over ⅜ to 41/64-in. incl.	48.00

Worcester up $2; Galveston up $6; Pacific Coast up $9.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	1.90c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$3.75
Connellsville, fdry.	4.75- 5.50
Connell. prem. fdry.	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry.	5.50- 5.75
Wise county fur.	4.50- 4.75

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	9.75
Chicago, del.	10.50
Milwaukee, ovens	10.50
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.00
Indianapolis, del.	10.00
Cincinnati, del.	9.75
Cleveland, del.	10.30
Buffalo, del.	10.50
Detroit, del.	10.25
Philadelphia, del.	10.65

Coke By-Products

Spot, gal., freight allowed east of Omaha	
Pure and 90% benzol	16.00c
Toluol, two degree	22.00c
Solvent naphtha	26.00c
Industrial xylol	26.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
Do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes, balls, bbls. to jobbers	6.75c
Per ton, bulk, f.o.b. port	
Sulphate of ammonia	$26.75

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25 sil.; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$21.00	$21.50	$20.50	$22.00
Birdsboro, Pa.	21.00	21.50	20.50	22.00
Birmingham, Ala.‡	16.38	.....	15.38	21.00
Buffalo	20.00	20.50	19.00	21.00
Chicago	20.00	20.00	19.50	20.50
Cleveland	20.00	20.00	19.50	20.50
Detroit	20.00	20.00	19.50	20.50
Duluth	20.50	20.50	.....	21.00
Erie, Pa.	20.00	20.50	19.50	21.00
Everett, Mass.	21.75	22.25	21.25	22.75
Granite City, Ill.	20.00	20.00	19.50	20.50
Hamilton, O.	20.00	20.00	19.50	.....
Neville Island, Pa.	20.00	20.00	19.50	20.50
Provo, Utah	18.00	.....	.....	.....
Sharpsville, Pa.	20.00	20.00	19.50	20.50
Sparrow's Point, Md.	21.00	.....	20.50	.....
Swedeland, Pa.	21.00	21.50	20.50	22.00
Toledo, O.	20.00	20.00	19.50	20.50
Youngstown, O.	20.00	20.00	19.50	20.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	21.39	21.39	20.89	21.89
Baltimore from Birmingham	21.78	.....	20.66	.....
Boston from Birmingham	21.87	.....	.....	.....
Boston from Everett, Mass.	22.25	22.75	21.75	23.25
Boston from Buffalo	22.25	22.75	21.75	23.25
Brooklyn, N. Y., from Bethlehem	23.50	24.00	.....	.....
Canton, O., from Cleveland	21.39	21.39	20.89	21.89
Chicago from Birmingham	†20.22	.....	.....	.....
Cincinnati from Hamilton, O.	20.44	21.11	20.78	.....
Cincinnati from Birmingham	20.06	.....	19.06	.....
Cleveland from Birmingham	20.32	.....	19.82	.....
Mansfield, O., from Toledo, O.	21.94	21.94	21.44	21.44
Milwaukee from Chicago	21.10	21.10	20.60	21.10
Muskegon, Mich., from Chicago, Toledo or Detroit	23.19	23.19	22.69	23.69
Newark, N. J., from Birmingham	22.15	.....	.....	.....
Newark, N. J., from Bethlehem	22.53	23.03	.....	.....
Philadelphia from Birmingham	21.46	.....	20.96	.....
Philadelphia from Swedeland, Pa.	21.84	22.34	21.34	.....
Pittsburgh district from Neville Island	Neville base, plus 69c, 84c, and $1.24 freight.			
Saginaw, Mich., from Detroit	22.45	22.45	21.95	21.95

	No. 2 Fdry.	Malleable	Basic	Bessemer
St. Louis, northern	21.55	20.55	20.05	.....
St. Louis from Birmingham	†20.12	.....	19.82	.....
St. Paul from Duluth	22.08	22.08	.....	22.58

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $25.50, Phil. base, standard and copper bearing, $26.63.

Gray Forge		Charcoal	
Valley furnace	$19.50	Lake Superior fur.	$25.00
Pitts. dist. fur.	19.50	do., del. Chicago	28.34
		Lyles, Tenn	23.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $24.50; 6.51-7—$25.00; 7-7.50—$25.50; 7.51-8—$26.00; 8-8.50—$26.50; 8.51-9—$27.00; 9-9.50—$27.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$60.80

First Quality

Pa., Ill., Md., Mo., Ky.	47.50
Alabama, Georgia	47.50
New Jersey	52.50

Second Quality

Pa., Ill., Ky., Md., Mo.	42.75
Georgia, Alabama	34.20
New Jersey	49.00

Ohio

First quality	39.90
Intermediate	36.10
Second quality	31.35

Malleable Bung Brick

All bases	$56.05

Silica Brick

Pennsylvania	$47.50
Joliet, E. Chicago	56.05
Birmingham, Ala.	47.50

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$28.00
Wire cut	$26.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Do. domestic	40.00
Do., f.o.b. Chewelah, Wash., net ton, bulk	22.00
net ton, bags	26.00
Quickset magnesite grains, f.o.b. Chewelah, Wash., net ton, bulk	22.00

Basic Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$47.00
Chem. bonded chrome	47.00
Magnesite brick	67.00
Chem. bonded magnesite	57.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail $20, barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloy Prices

Ferromanganese, 78-82%, tidewater, duty pd. $92.50
Do., del. Pittsburgh 97.77

Spiegeleisen, 19-21% dom. Palmerton, Pa., spot 28.00
Do., New Orleans 28.00
Do., 26-28%, Palmerton 33.00

Ferrosilicon, 50% freight allowed, c.l. 69.50
Do., ton lot 80.50
Do., 75 per cent 126.00
Spot, $5 a ton higher.

Silicoman., 2½ carbon 97.75
2% carbon 102.75 1%, 112.75
Contract ton price $11 higher; spot $5 over contract.

Ferrotungsten, stand., lb. con. del. cars 1.60-1.65

Ferrovanadium, 35 to 40%, lb., cont. 2.70-2.80

Ferrophosphorus, per ton, c.l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage, 58.50; electrolytic, per ton, c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage 75.00

Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del. carlots 10.50c
Do., ton lots 11.25c
Do., less-ton lots 11.50c

67-72% carloads, 2% carbon, per lb. contained chrome 16.50c
Do., ton lots 17.25c
Do., less-ton lots 17.50c

	Carloads	Ton lots	Less ton
2% carb.	16.50c	17.25c	17.50c
1% carb.	17.50c	18.25c	18.50c
0.10% carb.	18.50c	19.25c	19.50c
0.20% carb.	19.50c	20.25c	20.50c

Spot ¼c higher

Ferromolybdenum, 55-65% molyb. cont., f.o.b. mill, lb. 0.95

Calcium molybdate, lb. molyb. cont., f.o.b. mill 0.80

Ferrotitanium, 40%, lb. con. ti., ton lots $1.23
Do, less-ton lots 1.25
20-25% carbon, 0.10 max., ton lots, lb. 1.35
Do, less-ton lots 1.40
Spot 5c higher

Ferrocolumbium, 50-55%, contract, lb. con. col., f.o.b. Niagara Falls $2.25
Do, less-ton lots 2.30
Spot is 10c higher

Technical molybdenum trioxide, 53 to 60% molybdenum, lb. molyb. cont., f.o.b. mill 0.80

Ferro-carbon-titanium, 15-18%, ti., 6-8% carb., carlots, contr., net ton $142.50
Do, spot 145.00
Do, contract, ton lots 145.00
Do, spot, ton lots 150.00

15-18% ti., 3-5% carbon, carlots, contr., net ton 157.50
Do, spot 160.00
Do, contract, ton lots. 160.00
Do, spot, ton lots 165.00

Alsifer, contract carlots, f.o.b. Niagara Falls, lb. 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c
Spot ½c lb. higher

Chromium Briquets, contract carloads, freight allowed, lb. 7.25c
Do, spot carlots, bulk 7.50c
Do, ton lots 8.00c
Do, less-ton lots 8.50c

Tungsten Metal Powder, according to grade, spot shipment, 200-lb. drum lots, lb. $2.30
Do, smaller lots 2.40

Vanadium Pentoxide, contract, lb. contained $1.10
Do, spot 1.15

Chromium Metal, 98% cr., 0.50 carbon max., contract, lb. con. chrome 80.00c
Do, spot 85.00c
88% chrome, contract 79.00c
Do, spot 84.00c

Silicon Metal, 1% iron, contract, lb. 14.50c
Do, 2% 13.00c
Spot ¼c higher

Silicon Briquets, contract, carloads, freight allowed, ton $69.50
Carload, spot 74.50
Less-ton lots, lb. 3.75c

Manganese Briquets, contract carloads, freight allowed lb. 4.75c
Ton lots 5.25c
Less-ton lots 5.50c
Spot ¼c higher

Zirconium Alloy, 12-15%, carloads, gross ton $97.50
Do, spot 102.50
34-40%, contract, carloads, lb., alloy 14.00c
Do, ton lots 15.00c
Do, less-ton lots 16.00c
Spot ¼c higher

Molybdenum Powder, 99%, f.o.b. York, Pa., 200-lb. kegs, lb. $2.60
Do, 100-200 lb. lots 2.75
Do, under 100-lb. lots 3.00

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-in. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled	Sheets: Cold Rolled	Sheets: Galv. No. 24
Boston	3.98	4.21	5.21	3.85	3.85	5.66	3.86	4.93	4.76
New York (Metropolitan)	3.94	4.11	4.11	3.76	3.75	5.56	3.73	4.90	4.40
Philadelphia	3.60	3.60	4.10	3.40	3.40	5.00	3.40	....	4.50
Baltimore	3.80	3.95	4.35	3.65	3.65	5.00	3.70	5.05	4.30
Norfolk, Va.	4.00	4.15	4.55	3.85	3.85	5.20	3.90	4.80	5.40
Buffalo	3.60	3.97	3.97	3.77	3.55	5.40	3.50	4.55	4.40
Pittsburgh	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.60	4.50
Cleveland	3.50	3.65	3.65	3.55	3.73	5.33	3.50	4.70	4.68
Detroit	3.68	3.83	3.83	3.75	3.80	5.42	3.58	4.65	4.74
Cincinnati	3.85	4.00	4.00	3.80	3.83	5.43	3.75	....	4.78
Chicago	3.60	3.75	3.75	3.55	3.55	5.15	3.50	4.45	4.50
Minneapolis	3.85	4.00	4.00	3.80	3.80	5.40	3.75	5.10	4.75
Milwaukee	3.73	3.88	3.88	3.68	3.68	5.28	3.63	4.58	4.63
St. Louis	3.87	4.02	4.02	3.82	3.82	5.42	3.77	4.72	4.77
Kansas City	4.15	4.40	4.40	4.10	4.10	5.70	4.10	....	4.75
Memphis	4.01	4.16	4.16	3.96	3.96	5.71	3.91	....	5.26
Chattanooga	3.90	4.05	4.05	3.85	3.85	5.80	3.80	....	4.40
Tulsa, Okla.	4.64	4.79	4.79	4.59	4.59	6.19	4.54	....	5.54
Birmingham, Ala.	3.50	3.65	3.65	3.45	3.45	5.83	3.40	....	4.75
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	....	5.15
Houston, Tex.	3.50	5.85	6.25	4.05	4.05	5.65	4.20	....	5.25
Seattle	4.30	4.50	5.85	4.05	4.15	5.90	4.20	....	5.50
Portland, Oreg.	4.30	4.70	6.10	4.15	4.15	5.90	4.30	6.50	5.25
Los Angeles	4.00	4.50	6.35	4.00	4.00	6.20	4.20	6.30	5.05
San Francisco	4.05	4.45	6.00	3.85	3.95	5.45	4.00	6.40	5.15

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars: 2300	3100
Boston	3.61	4.43	4.28	7.65	6.25	6.00	8.05	8.73	7.33
New York	3.66	4.39	4.14	7.50	6.10	5.85	9.25	8.69	7.29
Philadelphia	3.66	4.36	3.85	7.46	6.06	5.81	8.71	....	....
Baltimore	....	4.35	3.95	...	....	....	....	....	....
Norfolk, Va.	.	4.60		...	....	....	....	....	....
Buffalo	3.57	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Pittsburgh	3.35	3.95	3.80	7.35	5.95	5.70	7.75	8.35	6.95
Cleveland	3.35	4.05	3.70	7.45	6.05	6.05	7.85	8.25	6.85
Detroit	3.55	4.10	3.83	7.57	6.17	5.92	7.39	8.55	7.15
Cincinnati	3.60	4.30	3.90	7.59	6.19	5.94	8.99	8.60	7.20
Chicago	3.65	4.05	3.80	7.25	5.85	5.60	7.65	8.25	6.85
Minneapolis	....	4.64	4.00	7.60	6.20	8.79	9.34	8.94	7.54
Milwaukee	....	4.18	3.93	7.48	6.08	5.83	7.88	8.48	7.08
St. Louis	3.76	4.32	4.07	7.62	6.22	5.97	8.02	8.62	7.22
Kansas City	4.46	4.85	.	.	....	....	....	....	.
Memphis	....	4.61	....	...	....	....	....	....	....
Chattanooga	....	4.90		....	....	....	....	....	....
Tulsa, Okla.	....	5.09	....	....	..	..	....	....	....
Birmingham, Ala.	....	4.73	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Seattle	....	5.60	5.65	....	7.80	7.65	8.45	....	....
Portland, Oreg.	....	5.60	6.10	9.00	8.00	7.85	8.70	....	....
Los Angeles	4.45	6.60	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	*9.30	6.55	5.20	9.65	8.80	8.65	9.30	10.65	9.80

*Based on minimum quantity.

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, August 11

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Quoted in dollars at current value	Continental North Sea Channel or ports, gross tons **Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$26.84 5 10 0	$15.04	1 17 0
Basic bessemer	....	18.09	2 4 6
Hematite, Phos. .03-.05	31.72 6 10 0*	.....	.....
Billets	$38.43 7 17 6	$34.55	4 5 0
Wire rods, No. 5 gage	55.02 11 5 6	41.67	5 2 6
Standard rails	$49.41 10 2 6	$46.75	5 15 0
Merchant bars	2.40c 11 0 0	1.94c	5 5 0
Structural shapes	2.32c 10 12 6	1.79c	4 17 6
Plates, ¼ in. or 5 mm.	2.52c 11 11 3	2.07c to 2.25c	5 12 6 to 6 2 6
Sheets, black, 24 gage or 0.5 mm.	2.83c 13 0 0	2.76c	7 10 0°
Sheets, gal., 24 ga., corr.	3.65c 16 15 0	3.22c	8 15 0
Bands and strips	2.89c 13 5 0	2.02c	5 10 0
Plain wire, base	4.25c 19 10 0	2.25c to 2.67c	6 2 6 to 7 5 0
Galvanized wire, base	5.07c 23 5 0	2.89c to 2.99c	7 17 6 to 8 2 6
Wire nails, base	4.03c 18 10 0	2.57c to 2.79c	7 0 0 to 7 10 0
Tin plate, box 108 lbs.	$ 4.94 1 0 3	.....	.....

British ferromanganese $92.50 delivered Atlantic seaboard duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French Francs		Belgian Francs		Reich Mark
Fdy. pig iron, Si. 2.5	$26.60 5 9 0(a)	$16.33	598	$14.83	440	$25.26 63
Basic bess. pig iron	24.40 5 0 0(a)	.....	...	.....	...	27.87 (b)69.50
Furnace coke	6.71 1 7 6	5.60	205	7.25	215	7.62 19
Billets	38.43 7 17 6	22.93	840	28.98	860	38.70 96.50
Standard rails	2.21c 10 2 6	1.38c	1,150	2.06c	1,375	2.38c 132
Merchant bars	2.65c 12 4 0††	1.30c	1,080	1.65c	1,100	1.98c 110
Structural shapes	2.40c 11 0 6††	1.27c	1,055	1.65c	1,100	1.93c 107
Plates, ¼-in. or 5 mm.	2.55c 11 14 3††	1.62c	1,350	2.06c	1,375	2.29c 127
Sheets, black	3.43c 15 5 0§	1.92c	1,600‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	4.03c 18 10 0	2.70c	2,250	4.13c	2,750	6.66c 370
Plain wire	4.25c 19 10 0	1.99c	1,660	2.48c	1,650	3.11c 173
Bands and strips	2.82c 12 19 0††	1.45c	1,210	1.95c	1,300	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. 5s rebate to approved customers. (b) hematite. °Close annealed ††Rebate of 15s on certain conditions.

**Gold pound sterling carries a premium of 67 per cent over paper sterling.

—The Market Week—

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1.	12.00
Bos. dock No. 1 exp.	12.50-13.00
New Eng. del. No. 1	13.00
Buffalo, No. 1	14.00-14.50
Buffalo, No. 2	12.00-12.50
Chicago, No. 1	14.00-14.50
Chicago, auto, no alloy	12.00-12.50
Chicago, No. 2 auto	11.00-11.50
Cincinnati, dealers	11.75-12.25
Cleveland, No. 1	12.50-13.00
Cleveland, No. 2	11.50-12.00
Detroit, No. 1	10.00-10.50
Eastern Pa., No. 1	14.50
Eastern Pa., No. 2	13.00
Federal, Ill.	11.50-12.00
Granite City, R. R.	12.00-12.50
Granite City, No. 2	11.00-11.50
Los Angeles, No. 1	11.50-12.00
Los Angeles, No. 2	10.00-10.50
N. Y. dock No. 1 exp.	†11.50
Pitts., No. 1 (R. R.)	16.00-16.50
Pittsburgh, No. 1	15.00-15.50
Pittsburgh, No. 2	14.00-14.50
St. Louis, R. R.	12.00-12.50
St. Louis, No. 2	11.50-12.00
San Francisco, No. 1	12.00
Seattle, No. 1	10.00-12.00
Toronto, dirs. No. 1	7.00
Valleys, No. 1	14.50-15.00

COMPRESSED SHEETS

Buffalo	12.00-12.50
Chicago, factory	13.00-13.50
Chicago, dealer	11.50-12.00
Cincinnati, del.	10.75-11.25
Cleveland	12.00-12.50
Detroit	11.25-11.75
E. Pa., new mat.	14.50
E. Pa., old mat.	11.00-11.50
Los Angeles	12.50-13.00
Pittsburgh	15.25-15.75
St. Louis	10.00-10.50
Valleys	14.00-14.50

BUNDLED SHEETS

Buffalo, No. 1	12.00-12.50
Buffalo, No. 2	11.00-11.50
Cleveland	9.50-10.00
Los Angeles	11.00-11.50
Pittsburgh	14.00-14.50
St. Louis	7.50- 8.00
Toronto, dealers	5.00

SHEET CLIPPINGS, LOOSE

Chicago	9.50-10.00
Cincinnati, dealers	6.75- 7.25
Detroit	7.50- 8.00
†Los Angeles	3.75- 4.00
St. Louis	7.00- 7.50

BUSHELING

Buffalo, No. 1	12.00-12.50
Chicago, No. 1	12.50-13.00
Cincin., No. 1, deal.	6.50- 7.00
Cincinnati, No. 2	3.00- 3.50
Cleveland, No. 2	7.50- 8.00
Detroit, No. 1, new	10.00-10.50
Valleys, new, No. 1	13.75-14.25
Toronto, dealers	5.00

MACHINE TURNINGS (Long)

Birmingham	6.00- 7.00
Buffalo	6.50- 7.00
Chicago	6.50- 7.00
Cincinnati, dealers	4.25- 4.75
Cleveland	7.00- 7.50
Detroit	6.50- 7.00
Eastern Pa.	8.50- 9.00
Los Angeles	4.00- 4.25
New York	†3.50- 4.00
Pittsburgh	9.00- 9.50
St. Louis	4.00- 4.50
Toronto, dealers	3.50
Valleys	9.00- 9.50

SHOVELING TURNINGS

Buffalo	8.00- 8.50
Cleveland	7.50- 8.00
Chicago	7.00- 7.50
Detroit	7.50- 8.00
Pittsburgh	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	2.00
Buffalo	7.00- 7.50
Cincinnati, dealers	3.75- 4.25
Cleveland	7.50- 8.00
Eastern Pa.	6.00- 6.50
Detroit	6.75- 7.25
New York	†2.50- 3.00
Pittsburgh	7.50- 8.00
Toronto, dealers	3.50

AXLE TURNINGS

Boston district	†7.50
Buffalo	9.50-10.00
Chicago, elec. fur.	13.50-14.00
Eastern Pa.	10.50-11.00
St. Louis	9.00- 9.50
Toronto	6.00

CAST IRON BORINGS

Birmingham	6.00- 6.50
Boston dist. chem.	†6.00
Bos. dist. for mills	†6.00
Buffalo	7.00- 7.50
Chicago	7.25- 7.50
Cincinnati, dealers	3.75- 4.25
Cleveland	7.50- 8.00
Detroit	6.75- 7.25
E. Pa., chemical	10.00-11.00
New York	†3.50- 4.00
St. Louis	4.00- 4.50
Toronto, dealers	3.50

RAILROAD SPECIALTIES

Chicago	16.50-17.00

ANGLE BARS—STEEL

Chicago	16.50-17.00
St. Louis	14.00-14.50

SPRINGS

Buffalo	16.00-16.50
Chicago, coil	16.50-17.00
Chicago, leaf	16.00-16.50
Eastern Pa.	16.50-17.00
Pittsburgh	17.00-17.50
St. Louis	15.00-15.50

STEEL RAILS, SHORT

Birmingham	14.00
Buffalo	17.00-17.50
Chicago (3 ft.)	16.50-17.00
Chicago (2 ft.)	17.50-18.00
Cincinnati, dealers	17.50-18.00
Detroit	15.00-15.50
Los Angeles	15.00-17.50
Pitts., 3 ft. and less	17.00-17.50
St. Louis, 2 ft. & less	14.50-15.00

STEEL RAILS, SCRAP

Boston district	†13.50-14.00
Buffalo	16.00-16.50
Chicago	14.50-15.00
Cleveland	17.00-17.50
Pittsburgh	16.00-16.50
St. Louis	13.25-13.75
Seattle	16.00

FROGS, SWITCHES

Chicago	14.00-14.50
St. Louis, cut	13.25-13.75

ARCH BARS, TRANSOMS

St. Louis	15.00-15.50

PIPE AND FLUES

Cincinnati, dealers	6.50- 7.00
Chicago, net	8.00- 8.50

RAILROAD GRATE BARS

Buffalo	10.00-10.50
Chicago, net	8.00- 8.50
Cincinnati, dealers	7.50- 8.00
Eastern Pa.	13.50
New York	†8.50- 9.00
St. Louis	8.50- 9.00

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.50-10.00
Chicago, No. 1 net	9.50-10.00
Eastern Pa., No. 1	15.00-15.50
St. Louis, No. 1	11.00-11.50
St. Louis, No. 2	12.00-12.50
Toronto, No. 1 dlr.	14.00

FORGE FLASHINGS

Boston district	†7.00
Buffalo	12.00-12.50
Cleveland	11.00-11.50
Detroit	8.50- 9.00
Los Angeles	9.00
Pittsburgh	13.00-13.50

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	16.50-17.00

LOW PHOSPHORUS

Buffalo, crops	16.50-17.00
Cleveland, crops	18.00-18.50
Eastern Pa., crops	16.50-17.00
Pittsburgh, crops	17.00-17.50

LOW PHOS. PUNCHINGS

Buffalo	15.50-16.00
Chicago	16.50-17.00
Eastern Pa.	17.00-17.50
Pitts. (light & hvy.)	14.50-15.00
Seattle	15.00

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	15.50-15.75
Chicago	18.50-19.00
New York	†14.00-14.50
Eastern Pa.	17.00-17.50
St. Louis	15.50-16.00

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	16.50-17.00
Boston district	†16.00
Chicago, net	18.50-19.00
Eastern Pa.	21.50-22.50
St. Louis	16.50-17.00

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	13.00-13.50

SHAFTING

Boston district	†14.25
New York	†15.00-15.50
Eastern Pa.	19.50-20.00
St. Louis, 1¼-3¾"	17.00-17.50

CAR WHEELS

Birmingham	14.00-15.00
Boston dist., iron	†11.00
Buffalo, steel	16.50-17.00
Chicago, iron	14.50-15.00
Chicago, rolled steel	16.00-16.50
Cincin., iron, deal.	14.00-14.50
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	16.50-17.00
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	16.00-16.50
St. Louis, iron	13.00-13.50
St. Louis, steel	14.75-15.25

NO. 1 CAST SCRAP

Birmingham	13.00-13.50
Boston, No. 1 mach.	†11.00-11.25
N. Eng. del. No. 2	10.50-11.00
N. Eng. del. textile	13.00-13.50
Buffalo, cupola	13.50-14.00
Buffalo, mach.	15.00-15.50
Chicago, agri. net	11.50-12.00
Chicago, auto net	13.00-13.50
Chicago, railr'd net	11.50-12.00
Chicago, mach, net	13.00-13.50
Cincin., mach. deal.	12.50-13.00
Cleveland, mach. net	16.00-16.50
Eastern Pa., cupola	16.50-17.00
E. Pa., mixed yard	14.00-14.50
Los Angeles, net	13.50-14.00
Pittsburgh, cupola	15.00-15.50
San Francisco, del.	13.50-14.00
Seattle	10.00-12.00
St. Louis, cupola	10.50-11.00
St. L., No. 1, mach.	13.25-13.75
St. Louis, agr. mach.	12.50-13.00
Toronto, No. 1, mach., net	10.50

HEAVY CAST

Boston dist. break.	†10.75
New England, del.	†12.50-13.00
Buffalo, break.	11.00-11.50
Cleveland, break. net	13.00-13.50
Detroit, break.	9.50-10.00
Detroit, auto net	11.25-11.75
Eastern Pa.	16.00-16.50
Los Ang., auto, net	13.00-13.50
New York, break.	†11.50-12.00
Pittsburgh, break.	13.00-13.50

STOVE PLATE

Birmingham	8.00- 8.50
Boston district	†8.00- 8.25
Buffalo	12.00-12.50
Chicago, net	10.00-10.50
Cincinnati, dealers	7.50- 8.00
Detroit, net	8.50- 9.00
Eastern Pa.	13.50
New York, fdry.	†9.00-10.00
St. Louis	10.50-11.00
Toronto, dealers, net	7.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	14.50-15.00
Buffalo	13.50-14.00
Chicago, R. R.	16.00-16.50
Cincin., agri. deal.	12.00-12.50
Cleveland, rail	14.50-15.00
Eastern Pa., R. R.	15.50-16.00
Los Angeles	17.50-18.00
Pittsburgh, rail	14.50-15.00
St. Louis, R. R.	12.75-13.25

Iron Ore

Lake Superior Ore

Gross ton, 51½ % Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, c.i.f. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	13.00
Swedish low phos.	13.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton unit, duty pd. nom.	20.00
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$24.50-25.50
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	nom. 35.00
so. African,, 50-52%	nom. 35.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 76

Pittsburgh—New business in steel sheets shows a slight drop, following the placing of some automotive tonnage the previous week but production is unchanged. Miscellaneous demand continues the strongest source of new business and shows some signs of strengthening. Galvanized sheet demand depends to a considerable degree on the farm situation, which indicates probability of increased buying. The rate of production of galvanized sheets is pushing up slowly, being estimated at 50 per cent for last week.

Cleveland — Continued steady, if small, gain in buying of sheets, both hot and cold-rolled, is being experienced, with the promise of a larger increase as automotive production on new models is enlarged. Most orders are small as consumers avoid accumulating stocks, buying for current needs only. Inventories are believed to be at a minimum in most cases. As a result orders cover the entire range of products and come from practically all classes of consumers.

Chicago—Sales of sheet and strip steel are unchanged, following recent improvement resulting from a renewal of some automotive demand and slightly heavier requirements from miscellaneous manufacturing interests.

Improvement is not expected to materialize substantially until later in the month. Automotive demand, better because production of 1939 models is beginning, is still not especially large, but decidedly heavier tonnages are expected to move about the middle of August.

Boston—Improvement in sheet demand is light, with sellers of blue annealed experiencing most of the moderate gains from small tank fabricators. Jobbers are buying only to keep stocks filled, distribution through warehouses being spotty. Stamping and sheet metal shops are buying sparingly, although slight but irregular gains have been made with galvanized for the building trade considerably improved. Prices on all finishes are steady with the secondary market for galvanized more stable.

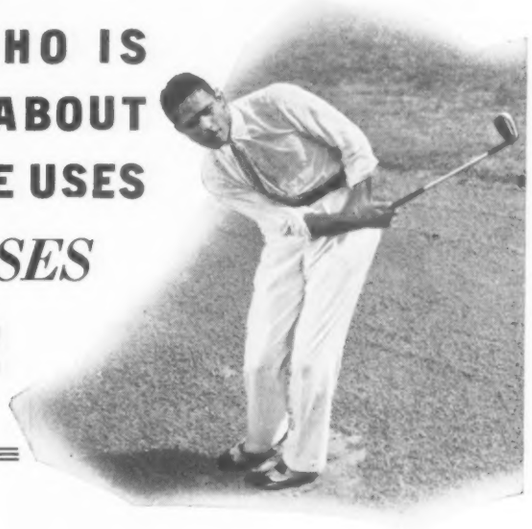
New York—Sheet sales fluctuate considerably and August seems to be maintaining about the same rate as July. In some grades expansion of volume has been steady, notably in galvanized and in sheets for stoves. Federal work and automotive needs are expected to improve buying in the fall. In general inventories are small, setting the stage for immediate resort to mill buying when demand for manufactured products increases.

Buffalo—With light tonnages being placed by automotive manufacturers, activity in the sheet and strip steel markets continues to show a gradual improvement.

Diversified specifications are limited to small tonnages, but indications are that inventories of consumers are low. Principal buying is of a miscellaneous character. Consumers generally are still reluctant to take on more stock than is needed for present business requirements. The price situation is still a topic for discussion but no immediate adjustments are expected.

Philadelphia—Resumption at the Willys Toledo, O., plant has not aided local automotive interests, due to substantial bank of parts on hand. Automotive activity is believed to be due for a sharp rise before the end of the month when work is scheduled to start on new models. Job stamping work is quieter, following a spurt a fortnight ago. Much Philco radio parts work is reported farmed out to

THE MAN WHO IS "CHOOSEY" ABOUT THE CLUBS HE USES . . . *CHOOSES* AMPCO!



ANALYTICAL, exacting buyers of non-ferrous alloys who require the utmost in wear resistance — tensile strength — corrosion resistance — choose Ampco Metal for bearings, gears, dies, valves . . because it possesses these inherent qualities.

Genuine Ampco Metal is available only from this company and its four licensee foundries — write for the bulletin "Ampco Metal — Its Uses in Modern Industry."

AMPCO METAL, Inc.
Dept. S-815
Milwaukee, Wisconsin

AMPCO METAL
"The Metal without an Equal"

Mahoning valley plants. Sheet prices are firm.

St. Louis—Producers and distributors of steel sheets report moderate improvement in business. Consumer inventories are apparently running low. Ordering, however, continues on a conservative scale, and nowhere is there a disposition to accumulate stocks. Betterment has occurred in the heavier materials, effecting heavier operations of tank and container manufacturers. For the first time in a considerable while, demand is appearing from builders of silos. Anheuser-Busch, Inc., has been granted a building permit for erection of $190,000 building for storage tanks. Tonnage of plates required has not been announced.

Cincinnati — Orders and shipments of steel sheets are at about 45 per cent of capacity with business coming in steadily. Expected increased demand for automotive uses within a short time gives encouragement for an active fall. Little speculative buying has been done on account of expectation of higher prices. Practically all current orders are for prompt delivery, consumers appearing to have little material on hand.

Birmingham, Ala. — Sheets are holding the gain registered over last month by virtue of bolstered demand for manufacturers' stock. Mills report there still is a tendency toward stock buying by jobbers and dealers.

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DAMASCUS MANGANESE AND ALLOY CASTINGS

Manganese and Alloy Steel Castings One Half to One Thousand Pounds Produced in our modernly equipped foundry from electric furnace steel and heat-treated in automatically controlled gas-fired furnaces.

DAMASCUS STEEL CASTING CO.
New Brighton, Pa.
(Pittsburgh District)

Strip

Strip Prices, Page 77

Pittsburgh—Strip steel, both hot and cold-rolled, is being produced at about 30 per cent of capacity, with demand showing a slight upward tendency from miscellaneous users. Automotive demand awaits appearance of 1939 models and the small buying of ten days ago for this purpose has not been repeated.

Cleveland — Improvement of demand from consumers of steel strip continues and involves all specifications. Most buying is for immediate needs and covers practically the entire range of consumers, most of whom have comparatively little stock on hand. Placing of automotive accessory business by builders is being reflected back to mills as partsmakers start production for 1939 models. Tonnage for this purpose is expected to increase materially in a short time.

Boston—Better buying of narrow cold strip is sustained, and, although the improvement is slight, the rate of incoming tonnage has been sufficient to lift finishing mill operations, in some instances five or more points. Broader miscellaneous demand is accompanied by more orders from the automobile industry. The latter are for rush delivery, indicating inventories have been allowed to dwindle to a low point.

New York—Combination of low inventories of cold strip, depleted banks of finished goods held by users and a slight, but spotty general industrial improvement, has stimulated demand for cold strip, the recent improvement in buying holding. Demand is broader from miscellaneous sources while additional volume is also being taken by the automotive industry and partsmakers. Buying is still largely from miscellaneous users with prompt delivery asked. The improvement in hot strip buying is slight.

St. Louis—Strip demand is holding the recent moderate improvement. Sellers report greater diversification in demand but buyers are covering only actual or definite prospective requirements. Warehouse stocks are reported complete

and recent ordering from mills has been light. Electrical supply and equipment manufacturers and air conditioning interests are expected to increase their strip requirements during the next few weeks.

Birmingham, Ala. — Continued accelerated production of strip is evident, largely because of current movement of cotton ties.

Plates

Plate Prices, Page 76

Cleveland — Some increase in demand and buying of steel plates is noted, but not to the extent experienced in lighter products. Boiler, tank and structural shops are only fairly busy and their requirements are light. Railroad business is also at a minimum, no new freight car business coming out in this district.

Boston—Except for a few scattered specified tank projects, plate buying is confined to scattered small lots by shop fabricators. Bids close Aug. 15 on a 400,000-gallon elevated tank, Osterville, Mass., and several oil tanks are under consideration, but not yet out for figures. Shipyard releases are steady and increasing, although not for some months will the bulk of recent heavy tonnage booked by district rate be rolled. Boiler shop operating schedules are low and railroad demand is slack.

New York—Plate makers anticipate a moderately good tonnage for the New York Central's proposed repair program. Alco Products Inc., this city, will require 2510 tons for large diameter water pipe to be installed in Minneapolis. Included in scattered fabricated tank awards are two vegetable oil tanks, Edgewater, N. J., and requiring 255 tons. Fabrication will be done by the Graver Tank & Mfg. Co. Inc., East Chicago, Ind.

The export cartel's plate price continues at 1.80c, f.a.s., eastern seaboard, the recent report of a dollar a ton cut having been denied.

Philadelphia—The Pennsylvania railroad has distributed about 1000 tons of plates but otherwise round tonnages are absent from the market. A few small lots have been released by shipbuilders, preliminary to heavier requirements over the next several weeks. Tank builders are not active. Some makers of boilers and pressure vessels have less work. Sweden is still in the market for 6000 tons of ship plates but mills, including independents, are unwilling to quote below the cartel fixed price.

Birmingham, Ala. — Railroad business and increased buying by tank manufacturers have served to steady production and shipments of plates. In addition there is some scattered business from miscellaneous sources, which maintains production at a satisfactory pace.

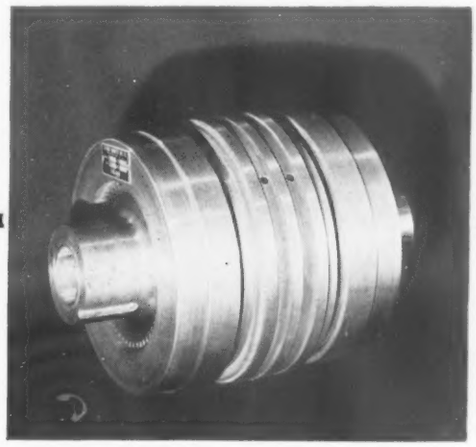
San Francisco—One of the largest tank orders placed in many months has just been booked by Chicago Bridge & Iron Co., six 51,000-barrel tanks for the naval base at San Diego, Calif., involving 1400 tons of plates and shapes, approximately 200 tons being shapes. Bids have just been taken on 800 feet of liner plates for the city of Los Angeles. Awards aggregated 1315 tons and brought the total to date to 21,522 tons, compared with 29,798 tons for the corresponding period in 1937.

Seattle—Important tonnages are few but shops are enjoying a moderate run of tank and boiler jobs. Service station construction is rather active.

Plate Contracts Placed

2510 tons, large diameter water pipe, Minneapolis, Minn., to Alco Products Co., Dunkirk, N. Y.

1190 tons, six 51,000-barrel tanks, naval



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FOR FORWARD AND REVERSING OPERATION

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SEPARATORS DRUMS ROLLS CLUTCHES BRAKES MAGNETS
HIGH STEARNS DUTY
LARGEST EXCLUSIVE BUILDERS OF MAGNETIC EQUIPMENT

650 So. 28th Street Milwaukee, Wis.

base, San Diego, Calif., to Chicago Bridge & Iron Co., Chicago.

400 tons, two 110-foot tenders for coast guard; Commercial Iron Works, Portland, Oreg., low.

255 tons, two vegetable oil tanks, Edgewater, N. J., to Graver Tank & Mfg. Co. Inc., East Chicago, Ind.

115 tons, 1000 feet, 40-inch diameter steel pipe, Cambridge, Mass., to Walsh Holyoke Steam Boiler Works, Holyoke, Mass.

Plate Contracts Pending

950 tons, elevated water tank, city of Batavia, N. Y.

Unstated tonnage, conversion of boilers from coal to fuel oil fired, including fuel oil tanks, spec. 8824, navy yard, Portsmouth, N. H., Simplex Oil & Heating Corp., New York, low at $29,882 with $38,383 alternate; bids Aug. 10. Pumping, burning, draft fans and accessories also included.

Bars

Bar Prices, Page 76

Pittsburgh—Buying of steel bars in August is at a somewhat increased rate over July, although automotive needs are still negligible. Most current business is from miscellaneous consumers, indicating a broader market in many lines. With increased buying for automobile production deemed certain to appear shortly the situation holds much of promise.

Cleveland — Better bar business is coming out and an important mill interest booked orders last week at 25 per cent better rate than the week before. Number and tonnage of inquiries is greater and comes from the entire range of consuming industries, with no one class predominating. Indications are that all buying is for current needs and no accumulation is being built. Mill surveys indicate inventories in users' hands are worked to a minimum.

Chicago—Sales of commercial and alloy bars show little improvement except in cases feeling a pickup in automotive demand. Tractor interests have been ordering at a fair rate and even some railroad buying of bars has been witnessed by certain producers, but substantial increases in volume of demand is not now expected to materialize until September.

Boston—For chain-making, nickel-steel bar requirements are heavier. The Boston navy yard has closed on 345 tons, various diameters, the bulk 3¼- inch, all but a few tons having been officially distributed with mills. Except for the above purchases, a slight increase in cold-finished buying and a sustained, but light demand for alloy bars, the situation is largely unchanged. Forging and soft steel carbon material continues to move in small lots. Inventories held by manufacturing consumers are light as a rule, but a slow or unchanged improvement in current consumption operates against purchases beyond immediate spotty needs. The airplane and machine tool industries are taking in some bars, but mostly specialties, alloys with specified treatment. From a tonnage standpoint such volume is not impressive.

New York—With bar stocks low and consumers still buying on a hand-to-mouth basis, an early upturn now anticipated in automobile requirements should prove to be a distinct boon to bar sellers.

Aircraft makers continue to specify actively in alloy bars, and while the tonnage is relatively limited, the dollar value of the orders is said to be large. Builders of road building equipment are still placing some good specifications, but tool and machinery builders are specifying lightly.

Philadelphia—Miscellaneous lots of steel bars are being placed by the manufacturing trade for both hot and cold-rolled specifications,

DESIGNING · ENGINEERING · MANUFACTURING

DEEP DRAWN SHELLS AND SHAPES

SPECIAL SHAPES BY THE Hackney METHOD ASSURE ECONOMY—EFFICIENCY—DEPENDABILITY

You can probably effect savings in time and money by turning over the entire problem of special shapes, for your products or equipment, to the Pressed Steel Tank Company. Hundreds of manufacturers have benefitted by taking advantage of Hackney's design experience and manufacturing facilities.

Numerous types of metals are used in the development of Hackney shapes and containers to meet exactly each individual requirement. Construction can be cold drawn, seamless or welded, as required.

If your requirements are unusual the Hackney engineering staff will gladly co-operate in developing the most practical container or shape for your needs. Write for full particulars today. There is no obligation.

PRESSED STEEL TANK COMPANY

208 S. La Salle St., Rm. 1211 CHICAGO
1387 Vanderbilt Concourse Bldg. NEW YORK
688 Roosevelt Building LOS ANGELES
1461 S. 66th Street MILWAUKEE

Hackney MILWAUKEE

Containers for Gases, Liquids and Solids

especially the latter. Warehouses are fairly well supplied in view of current demand and no disposition is noted in any direction to cover for distant requirements.

Buffalo — Improved demand for steel bars is due to miscellaneous buyers. The first automotive orders have been received by mills, but inquiries are restricted. Die-rolled and deformed bars continue the main support. Mills are gradually expanding production schedules.

Birmingham, Ala. — Bars are somewhat sluggish. Some inquiries, however, are to hand from manufacturers of agricultural implements that would indicate renewed demand from that source at an early date.

Pipe

Pipe Prices, Page 77

Pittsburgh — Placing of about 15,000 tons of 6 and 8-inch steel pipe by Continental Oil Co., divided equally between National Tube Co., Pittsburgh, and Republic Steel Corp., Cleveland, is the largest contract of this sort in some time. The line will run from Lance Creek to Cheyenne, Wyo., and thence to Denver, a total of 232 miles. Of this 96 miles will be 6-inch and 136 miles will be 8-inch.

General buying of steel pipe is steady but slow, with prospects of somewhat better volume as federal projects get under way.

Cleveland—Recent buying of cast iron pipe has been light but authorization of various municipal bond issues in Ohio Aug. 9 is expected to release considerable tonnage for this purpose, most being in connection with federal loans. Business arising from this and other sources is expected to give pipe foundries an active fall.

Chicago—Prospects are bright for a better market for cast iron pipe, as government allocations of money for local and neighboring projects become known. Present business is not improved and tonnages being moved are only minor, but sentiment is better in view of the numerous large projects expected soon. A water works project at Schiller, Ill., is estimated to involve some 300 tons of various sizes of cast iron pipe. Bids will be read August 17.

Boston — Heavy releases and shipments of cast iron pipe continue. While buying has temporarily slumped, orders for several hundred tons additional have been placed by the Boston district procurement office for shipments to various nearby municipalities. Bids close this week on 2500 tons of Osterville, Mass., while estimates will be ready soon on several thousand tons for Narragansett and East Smithfield, R. I. Merchant steel pipe buying is steady with inquiry for building requirements substantially heavier. This is especially true for veterans' hospitals' needs and state hospital construction in Connecticut. Large-diameter steel pipe contracts include 115 tons for a 40-inch steel pipe line, 1000 feet, Cambridge, Mass., awarded the Walsh Holyoke Steam Boiler Works, Holyoke, Mass.

New York — Approximately 4000 tons of conduit pipe, ranging from ½ to 4 inches in diameter, for the Metropolitan Life Insurance Co.'s housing project here has been let through L. K. Comstock & Co., 15 East Fifty-second street, sub-contractors, to the Graybar Electric Co., 420 Lexington avenue. This total exceeded previous trade estimates. Starrett Bros. & Eken, 40 Wall street, engineering contractors in general charge, have sub-let heating contract, involving approximately 3500 tons of steel pipe, to Baker, Smith & Co., 576 Greenwich street,

EC&M Magnetic Starter for Wound Rotor Motor

THIS illustration shows a standard, push button operated EC&M Magnetic Starter for use with a 200 HP, 440 Volt A.C. Wound Rotor Motor. Resistors are self-contained in ventilated enclosure on top of the cabinet and all internal wiring is complete.

Magnetic Contactors are of *LINE-ARC* design. This revolutionary principle of arc control prevents destructive burning of arc shields and keeps contacts cool, increasing contact-life beyond any previous standard of comparison.

Acceleration relays provide definite time acceleration and are of the readily adjustable type. Overload relays protect the motor against overheating due to overloads or loss of one phase. They are of the plunger type with EC&M special drop-back feature which prevents unnecessary tripping on slight overloads.

Write or wire us today for complete information on EC&M Magnetic Starters for wound rotor motors.

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HEAVY DUTY MOTOR CONTROL FOR CRANES, MILL DRIVES AND MACHINERY • BRAKES • LIMIT STOPS • LIFTING MAGNETS AND AUTOMATIC WELD TIMERS

Behind the Scenes with STEEL

Friday Noon

■ It is Friday noon. For a week and more news has been in the making. New machines have been announced, new processes finally perfected. Prices have changed. Men have died and others have found new jobs. Rumors have been running their course, plans have been made and remade, hopes have been lifted. An issue of STEEL has been taking shape.

■ And now it is Friday noon. Last night was sultry and the presses hummed heavily. The engineering section goes first. It has been worked on for weeks —built up—rechecked out in the field and now is finally set. Authoritative reviews, revealing progress and exchanging money-saving methods of production. One little item often worth thousands of dollars. Materials Handling, Steelmaking Progress, Welding, and every phase of metal fabricating. A melting pot of new ideas for engineers and production men.

■ Page proofs of Mirrors of Motordom and Windows of Washington have just come up. With a magician's touch Allen has put into two quickly-read pages all the fascinating story of automobiles. Equally capable, Lamm down in Washington has tied the loose ends of the political situation together in a clear, simple story of the week's developments of interest to the steel and metal-working industries. Outstanding services originated by STEEL.

■ The lines on The Business Trend charts are being wormed upward by the addition of a dab of solder; the plates made ready for the color form. It is Friday.

■ Checker-board layouts give page numbers and positions. Advertising pages sandwich neatly into late forms. Wires are streaming in from offices in Chicago, Pittsburgh, New York. Market prices are given the final check and new awards officially verified. Spot news stories are being rushed into type and corrected proofs shot down the tubes. Twenty full-time editors have been on the job all week—representatives and contributors in every potent industrial center have helped build STEEL. Hundreds of irrelevant items have been rejected. STEEL is modern. Complete, yet concise.

■ Downstairs, too, the race is on. From hot, smoking lead pots come line upon line of bright, shining type. Sharp eyes scan galleys for human errors. Headlines are cast and laid on the stone. Engravings are trued and made type-high for use. Wet, sticky page proofs are shot upstairs; forms are made ready; giant presses are started. Rollers are inked and the machinery oiled. Some stripped to the waist, perspiring and hot, they piece STEEL together and lock up the forms. It's Friday there, too, and Friday means work.

■ By late evening, lights will show on the ninth floor, the last pages will be read and the final forms put to bed. Dinners will be missed—home late tonight—Friday night. All night long the presses grind and Saturday's daylight means folding, gathering and binding. Deft hands slip copies into mailing envelopes which are addressed and ready. Addressed to steel mill presidents. Addressed to metal buyers. Addressed to superintendents, engineers, designers. Addressed to top-notch companies large and small. 12,000 strong. And then while business rests, fast trains spread STEEL to Oshkosh, Pittsburgh, Denver.

■ A new week begins. More plans, more machines, more changes. But soon it will be Friday—once again.

—SHRDLU

and the plumbing contract to J. L. Murphy Inc., 340 East Forty-fourth street. The pipe involved in these latter two sub-contracts have not as yet been placed.

Birmingham, Ala. — Pipe plants are marking time, to a certain extent, in anticipation of business likely to develop later in the year from government sources. Inquiry today reveals operations alternately on a three and four-day a week basis but with inquiries considerably on the upgrade.

Seattle—New projects are materializing and dealers expect improved volume shortly. Bids will be received by Tacoma Aug. 22 for water system pipe and accessories estimated at $167,000, a unit of the PWA-aided program totaling $1,575,000. Items specified in the call include 2011 tons of 4 to 20-inch cast iron, 50 tons fittings and 118 gate valves. Bremerton, Wash., has filed application for a PWA grant to aid proposed system improvements involving two new reservoirs and replacing 16-inch wood pipe with 24-inch cast iron. Tonnages are not stated. Goldendale, Wash., has purchased 7520 feet of water mains from Washington Corrugated Culvert Co., Spokane.

San Francisco — Bids will be opened at Tacoma, Wash., Aug. 22 for the largest inquiry of the year, 1660 tons of 4 to 20-inch and 281 tons of 12-inch. Awards last week were limited to lots of less than 100 tons, and totaled only 152 tons. This brought the year's aggregate to 18,516 tons, compared with 18,857 tons for the same period a year ago.

Steel Pipe Placed

15,000 tons, 6 and 8-inch, for Continental Oil Co., Lance Creek, Wyo., to Denver; divided between National Tube Co. and Republic Steel Corp.

Cast Pipe Pending

1660 tons, 4 to 20-inch, Tacoma, Wash.; bids Aug.22.
1000 tons, 8-inch, including 55 tons castings, Washington; bids Aug. 16, district commissioners.
319 tons, 6-inch, San Francisco; United States Pipe & Foundry Co., Burlington, N. J., low.
281 tons, 12-inch, Tacoma, Wash.; bids Aug. 22.
185 tons, 4 to 12-inch, San Bernardino, Calif.; United States Pipe & Foundry Co., Burlington, N. J., low.
122 tons, 8 and 12-inch, Spokane, Wash.; Pacific States Cast Iron Pipe Co., Provo, Utah, low.

Cold-Finished

Cold Finished Prices, Page 77

Pittsburgh—Fairly large increase in demand for cold-finished bars is noted, from a wide variety of users, with expectation of early buying by

automotive consumers. Price weakness is less evident and the situation in that respect seems to have cleared.

Wire

Wire Prices, Page 77

Pittsburgh—Wire and wire products are holding up well with the market somewhat more active. A strong seasonal farm demand is developing and there has also been a notable increase from a wide variety of manufacturing consumers.

Orders are miscellaneous in nature and do not represent any seasonal factors as far as the manufacturing division is concerned.

Cleveland — Wiremakers find increased inquiry and buying in all lines of wire and its products. Considerable automotive business is coming from partsmakers who have booked orders for 1939 accessories. With practically no inventories consumers are buying as additional business comes to their books. Present increased buying covers the entire line of wire products, indicating a general uplift in requirements.

Chicago — Conditions in the wire and wire products market are unchanged.

Producers are looking forward to the latter part of the month when automotive accessory manufacturers are expected to begin heavier ordering and bring general improvement in demand from miscellaneous sources. Requirements of diversified markets have been maintained fairly well and in view of the extreme summer dullness which had been expected at this time, present demand is rather encouraging.

Boston—Broader demand from miscellaneous consumers and a sustained, but slight improvement in wire buying by the automotive industry, have resulted in higher finishing operations in some departments, although the gain in production is spotty. One producer in the east has increased finishing schedules nearly eight points to approximately 50 per cent. Prompt delivery is specified on all orders with advance buying absent. More products are moving, including specialties.

New York—From the manufacturing trade, demand for wire, including specialties, maintains the recent slight gains and more tonnage is also appearing for the automobile trade. Diversified buying involves more products with prompt delivery specified on most new business. In some instances finishing mill operations have picked up slightly and there is also a mildly better call for rods. One district mill is now at 50 per cent of finishing capacity. Prices are firmly held.

Birmingham, Ala. — Demand for wire products is little changed from last week when shipments and production were reported fair by mills here. Some restocking by jobbers and dealers is evident.

Semifinished

Semifinished Prices, Page 77

Pittsburgh — Semifinished steel tonnages have been somewhat lighter over the past week and indications are that the following week will also be light, in line with the usual seasonal curve. There are indications that tonnages will be somewhat better next week, but are not expected to show any substantial gain.

Skelp orders have been fairly constant, but this is not true of other products. Wire rods are slightly more active, although sheet bars after a temporary period of comparatively good activity have dropped off again.

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FRANCE Fenwick, S. A.
CANADA John Bertram & Sons Co. Ltd.
ENGLAND Burton, Griffiths & Co. Ltd.

Rails, Cars

Track Material Prices, Page 77

Buying of steel for railroad use continues light since final placing of material for the Southern railway cars. This was well distributed among northern and southern mills. A fair tonnage of various forms of steel in small lots is being placed for repair purposes. There is no rail inquiry or buying and track fastenings are in light demand.

New York Central has applied to the interstate commerce commission for permission to purchase 28,600 tons of rails and fastenings from a $5,000,000 loan. The rails would cost $2,541,882. Repairs to 185 locomotives, 300 passenger cars and 1000 freight cars will use the remainder of the loan.

Wheeling & Lake Erie has awarded five locomotives to American Locomotive Co., New York. Southern Railway will inquire shortly for two passenger cars.

Buses Booked

American Car & Foundry Motors Co., New York: Five 25-passenger, sixteen 30-passenger and thirty-six 26-passenger, for Staten Island Coach Co., Staten Island, N. Y.

Car Orders Pending

Chief of engineers, United States army, 5 to 35 tank cars, 10,000-gallon capacity; bids Aug. 16, Washington.

Shapes

Structural Shape Prices, Page 76

New York — With structural contracts more numerous, approximating 8000 tons in the New York city district, new work is coming out in increased volume. Pending and active subway requirements total 9000 tons with a 6275-ton section, Brooklyn, closing Aug. 23 with the board of transportation, New York. Including piling and other steel needs, mostly structurals, close to 30,000 tons are active for the Delaware aqueduct upstate, early purchases on part being expected shortly. Bids are in on close to 2000 tons of New York state bridges and more smaller projects are up for estimates, mostly public works. Projects about to come up for estimate include a Hunter college building, criminal courts building and the Triborough hospital, all in the New York area, taking an estimated 17,000 tons.

Pittsburgh—Shape tonnages here continue a large factor in the production picture, with many projects coming out and some fairly large tonnages involved. Largest of the new tonnages is a subway in Brooklyn borough, New York, which will require 6275 tons for Section 9. Hangars at Bremerton, Wash., for navy land planes will need 1710 tons. Approximately 4500 tons were included in the award for the Pennsylvania avenue bridge, Washington, which went to Bethlehem Steel Co., Bethlehem, Pa. Harris Structural Steel Co. will supply 1160 tons of fabricated structurals for an addition to the Fifth avenue hospital, New York.

Cleveland — Plans for the west approach of the Main avenue bridge in Cleveland are understood to be close to the bidding stage, involving close to 3000 tons of steel. A bond issue for two bridges at Lorain, O., was approved Aug. 9, to provide funds necessary to obtain federal aid. Drawings are being prepared and bids will be asked this fall. On much of the small structural work low fabricated and erected prices are being quoted by some interests.

Boston — Structural steel inquiry is coming out in heavier volume than current contracts being placed, the latter being light. Although most are small I-beam or stringer spans, bridge needs in New England approximate 1200 tons, the largest in Maine closing this week, 555 tons.

Birmingham, Ala. — Some improvement in small projects, with better demand from fabricators has resulted in noticeable increase in structural shapes business. Potential government construction is held a likely boost to demand early in the fall.

Philadelphia — Pennsylvania state highway department is taking bids Aug. 19 for several bridges, including a 1700-ton job in Pike county,

Shape Awards Compared

	Tons
Week ending Aug. 13	26,940
Week ended Aug. 6	28,697
Week ended July 30	12,375
This week, 1937	23,454
Weekly average, year, 1937	23,251
Weekly average, 1938	16,688
Weekly average, July	13,886
Total to date, 1937	853,701
Total to date, 1938	550,721

Includes awards of 100 tons or more.

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180 tons in Cumberland county and 144 tons in Clearfield county, contractors are asking steel prices Aug. 17. William Muirhead Construction Co., Durham, N. C., is low on general contract to overhaul navy department building at Norfolk, Va., requiring 1200 tons. Private work is slow.

San Francisco—Outstanding structural lettings included 6000 tons for the Sacramento river bridge, Redding, Calif., taken by American Bridge Co., 1650 tons for a hangar at Hickman Field, T. H., booked by Minneapolis-Moline Power Implement Co., and 600 tons for the first crossing of the Los Angeles River, Los Angeles for the Southern Pacific, taken by Columbia Steel Co. Awards totaled 9086 tons, bringing the aggregate for the year to 82,151 tons, compared with 116,449 tons for the same period last year. Bids have just been opened on from 1200 to 1500 tons of tubular, sheet or concrete piling for the Ford Motor Co. plant at Long Beach, on 850 tons of sheet piling for a bulkhead for the Tongue Point lighthouse, Oreg., and on 395 tons for a steel storage building for the Bremerton, Wash., navy yard.

Seattle—Shapes continue to lead the market in this territory, construction at Puget Sound navy yard and Fort Lewis furnishing sizable tonnages. Between 1000 and 2000 tons structurals will be required for the Bonneville transmission line towers but specifications are not yet out. The Watsonville bridge on the Williamette river, planned for early construction will require about 400 tons.

Shape Contracts Placed

6000 tons, Sacramento river bridge, Redding, Calif., to American Bridge Co., Pittsburgh, Pa.

4500 tons, Pennsylvania avenue bridge, Washington, for District of Columbia, to Bethlehem Steel Co., Bethlehem, Pa.

1850 tons, east approach, Main avenue bridge, Cleveland, to Mt. Vernon Bridge Co., Mt. Vernon, O.

1600 tons, two airplane hangars, Chanute Field, Rantoul, Ill.

1115 tons, New York Medical college, Fifth avenue and East 105th street, New York, to Harris Structural Steel Co., New York; Irons & Reynolds Co., New York, general contractor.

1000 tons, bascule bridge, Cross Bay parkway, contract 4, Queens, N. Y., to American Bridge Co., Pittsburgh.

885 tons, office building, Humble Oil Co., Houston, Tex., to Mosher Steel Co., Houston.

645 tons, Larchmont Gardens housing project, Larchmont, N. Y., to Goodstein Iron & Steel Co., New York; A. N. Adelson Co., New York, general contractor.

600 tons, first crossing of Los Angeles river, Los Angeles, for Southern Pacific Co., to Columbia Steel Co., San Francisco.

575 tons, administration building, Undercliff sanatorium, Meriden, Conn., to American Bridge Co., Pittsburgh; Fusco-Amatruda Co., New Haven, general contractor.

525 tons, building, Laurel Heights sanatorium, Sheldon, Conn., to Bethlehem Steel Co., Bethlehem, Pa.

345 tons, addition, patients building, state hospital, Brooklyn, N. Y., to Ingalls Iron Works, Birmingham; M. Shipiro & Sons, New York, general contractor.

380 tons, Florida building, World's fair, New York, to Ingalls Iron Works, Pittsburgh.

335 tons, bridge, section JS-F, Gurnee, Lake county, Illinois, to Joseph T. Ryerson & Son Inc., Chicago.

316 tons, trash racks for intakes, Guntersville and Chickamauga power plants, to Ingalls Iron Works, $22,065, awarded Aug. 4 by Tennessee Valley authority, Knoxville, Tenn.; bids July 14.

315 tons, state office building, Concord, N. H., to Lyons Iron Works Inc., Manchester, N. H.; J. Pinney Co., Springfield, Mass., general contractor.

315 tons, foundry extension, for United States government, Bremerton, Wash., to Milwaukee Bridge Co., Milwaukee.

300 tons, Presbyterian church, Park avenue and Ninety-first street, New York, to Harris Structural Steel Co., New York; Vermilya-Brown Co., New York, general contractor.

290 tons, hospital addition, New Rochelle, N. Y., to Grand Iron Works, New York.

285 tons, Whittier school, Pittsburgh, to Fort Pitt Bridge Works, Pittsburgh.

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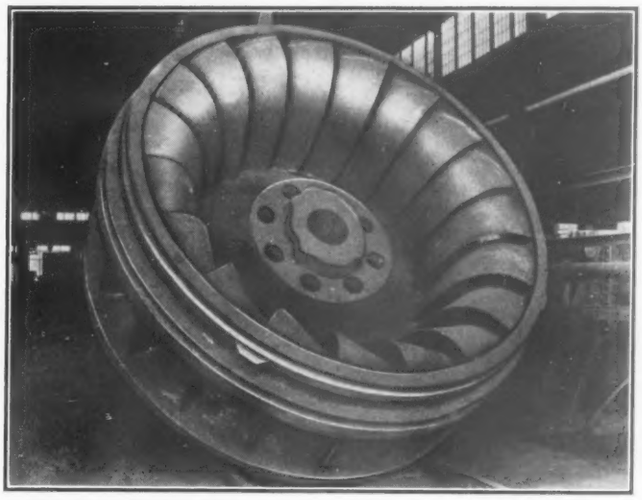

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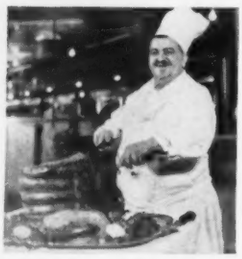

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HOTEL CLEVELAND Cleveland

285 tons, women's dormitory, University of Rochester, Rochester, N. Y., to Genesee Bridge Co., Rochester.

280 tons, army hangar addition, Coco Solo, Canal Zone, Panama, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

270 tons, building addition, Chapman Valve Mfg. Co., Indian Orchard, Mass., to Haarmann Steel Co., Holyoke, Mass.; Stone & Webster Co., Boston, contractors and engineers.

225 tons, building, Western Fuel Co., Milwaukee, to Milwaukee Bridge Co., Milwaukee.

220 tons, falsework, East 135th street, New York Central railroad, New York, to American Bridge Co., Pittsburgh.

210 tons, lookout towers, various locations, for United States government, to Bethlehem Steel Co., Bethlehem, Pa.

210 tons, bridge FAS 11, Meyers county, Oklahoma, to Patterson Steel Co., Tulsa, Okla.

200 tons, storage warehouse, San Diego, Calif., to Consolidated Steel Corp., Los Angeles.

200 tons, alterations Tenth street bridge, Beaver Falls, Pa., to Keystone Engineering Co., Pittsburgh.

200 tons, bridge, Orleans parish, Louisiana, to Bethlehem Steel Co., Bethlehem, Pa.; Forcum-James Co., Dyersburg, Tenn., general contractor.

195 tons, bridge, Lansing, Mich., to R. C. Mahon Co., Detroit.

195 tons, 2-story office building, Hoboken, N. J., to F. G. Schaefer Iron Works, Edgewater, N. J.; T. E. Rhodes Co., New York, general contractor.

185 tons, hospital building, White Plains, N. Y., to Harris Structural Steel Co., New York; A. L. Hartridge Co., New York, general contractor.

175 tons, electric utilities building, World's fair, New York, to Ingalls Iron Works, Birmingham.

165 tons, Electrolux building, Old Greenwich, Conn., to Lehigh Structural Co., Allentown, Pa.

165 tons, building, Morrell Packing Co., Sioux Falls, S. Dak., to St. Paul Foundry Co., St. Paul.

150 tons, addition to Pennsylvania Iron & Steel Co. plant, Los Angeles, to Pennsylvania Iron & Steel Co., Los Angeles.

145 tons, cab garage, Evansville, Ind., to International Steel Co., Evansville, Ind.

138 tons, Santa Ynez river bridge, Santa Barbara county California, to Consolidated Steel Corp., Los Angeles.

135 tons, spec. 1097, bureau of reclamation, Estes, Colo., to Minneapolis-Moline Power Implement Co., Minneapolis.

135 tons, Roumanian building, World's fair, New York, to F. G. Schaefer Iron Works, Edgewater, N. J.

125 tons, second district courthouse, Waltham, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.; D'Amore Construction Co., Boston, general contractor.

120 tons, bridge, Wallingford, Conn., to American Bridge Co., New York.

116 tons, galvanized steel towers, Chickamauga-Guntersville transmission line, to Lehigh Structural Steel Co., Allentown, Pa., $11,858.46, awarded Aug. 4, Tennessee Valley authority, Knoxville, Tenn.; bids July 12.

110 tons, addition to Hamilton avenue school, Greenwich, Conn., to Connecticut Iron Works, Stamford, Conn.

110 tons, roll storage building, Syracuse, N. Y., to Syracuse Engineering Co., Syracuse.

100 tons, San Joaquin river bridge, Fresno and Madera county, California, to Bethlehem Steel Co., Alameda, Calif.

Shape Contracts Pending

15,000 tons, bridge over Mississippi river, St. Clair county, Illinois; general contract to G. L. Tarlton Contractor Inc., St. Louis, on bid of $5,838,109.

6275 tons, subway, section 9, Brooklyn, N. Y., bids to New York board of transportation.

2024 tons, Pennsylvania state highway bridges; bids Aug. 19 to highway department.

1710 tons, United States navy landplane hangars, Bremerton, Wash.

1600 tons, addition to Fifty-seventh street plant, Sheffield Farms, New York.

1500 tons, hangar, Scott Field, Belleville, Ill.

1400 tons, piling, sewage disposal plant, New Haven, Conn.

1200 tons, overhauling building, navy department, Norfolk, Va.; William Muirhead Construction Co., Durham, N. C., low on general contract.

1200 to 1500 tons, tubular or H-column piles, Ford Motor Co. wharf, Long Beach, Calif., bids opened at Detroit.

1000 tons or more, Bonneville dam transmission towers; bids soon.

900 tons, addition to high school, Malden, Mass.; bids to board of education.

875 tons, apartment building, Philadelphia.

850 tons, sheet piling, bulkhead for Tongue Point lighthouse, Oreg., bids opened.

800 tons, steel sheet piling, coast guard, Cleveland; American Construction Co., Cleveland, low.

800 tons, four highway bridges, Illinois highway commission, Springfield, Ill.; bids August 12.

750 tons, state highway bridge, Rensselaer county, New York.

550 tons, warehouse and extensions to buildings, Hercules Powder Co., Parlin, N. J.

400 tons or more, Oregon state bridge over Willamette river at Watsonville.

400 tons, coast guard station, east end Navy Pier, Chicago, bids Aug. 12.

400 tons, apartment building, Annapolis, Md.; John McShain Inc., Philadelphia, low on general contract.

380 tons, East Monroe street bridge over Illinois Central tracks, Chicago; closing Aug. 16.

335 tons, metal shop building for United States coast guard, Curtis Bay, Baltimore.

330 tons, inspection building, railway facilities, San Francisco-Oakland bridge in Alameda county, Calif.; Independent Iron Works, Oakland, Calif., low.

250 tons, addition, public school 60, Bronx, N. Y.; bids Aug. 16 on steel work, fabricating and erecting direct, board of education, New York.

250 tons, Brazilian building, World's fair, New York.

250 tons, mill building, Union Tank Car Co., Wood River, Ill.

230 tons, mess hall, Annapolis, Md.; John K. Ruff Co., Baltimore, low on general contract.

211 tons, coach shop, Chicago & Eastern Illinois railway, Danville, Ill.

180 tons, building, Hood Investment Co., Reno, Nev.

175 tons, World's fair building for Carrier Corp., Flushing, N. Y.

153 tons, bridge in La Plata county, Colorado, for state; bids Aug. 16.

150 tons, bottling plant, Coca Cola Co., Baltimore; bids Aug. 26.

125 tons, beam spans, Espanola, N. Mex., for state.

125 tons, building, Federal Wine & Liquor Co., Jersey City, N. J.
125 tons, bridge, Loramie township, Shelby county, Ohio.
100 tons, Oregon state Catching Slough bridge; J. W. and J. R. Hillstrom, Marshfield, Oreg., general contractor.
Unstated tonnage, two hangars, McChord field, Fort Lewis, Wash.
Unstated tonnage, two bridges for Roza diversion dam, Washington; bids to reclamation bureau, Denver, Aug. 22.
Unstated tonnage, extension hangar No. 2 and hangar No. 3, fleet air base, specification 8936, San Diego, Calif.; Aug. 23.
Unstated, high school, Middleport, N. Y., Harbach & Kideney, Buffalo, low on general contract.
Unstated tonnage, 25 moorings consisting of steel buoys, chain and anchors, naval operating base, San Diego, Calif., Southwest Welding & Mfg. Co., Alhambra, Calif., low base bid, $385,700.

Reinforcing

Reinforcing Bar Prices, Page 77

New York — Reinforcing steel contracts are gradually mounting; also inquiry. Lacking large awards, estimated volume placed, including mesh, approximates 2500 tons. The largest inquiry is for sewers, close to 2000 tons including work in Brooklyn, on which estimates are being taken. Highway mesh continues to come out in good volume with pending tonnage on which bids are in approximating 1500 tons.

Cleveland—Buying of small lots of reinforcing bars is active and the aggregate is fairly large. Considerable tonnage is expected to become active at once for Ohio school projects for which bonds were voted Aug. 9, in connection with federal aid. L. C. Love, Akron, O., is low on 543 tons for a water treatment plant at Muncie, Ind.

Chicago — Sales of concrete reinforcing steel are improving and prospects for heavy tonnages at an early date are the brightest for some time. One large interest reports tonnages in the offing constitute such a large volume it will be virtually impossible to figure on all the projects. While the greatest call for reinforcing steel is issuing from government projects and municipal jobs financed with WPA money, private construction also is exerting a better demand.

With the appearance of heavier tonnages, a tendency of bar prices to firm up considerably has been noticed.

Boston — Reinforcing steel contracts approximate 1500 tons, the larger contracts being for state hospitals in Connecticut, with close to 900 tons going to a Williamsport, Pa., seller. Awards also include 150 tons for a state highway, Westerly, R. I., several for 100 to 200 tons and an encouraging number of small lettings. However, inquiry is coming out faster than current awards including more small bridges, government hospitals and other public work. Prices are still soft.

Philadelphia — Jobs involving tonnage of consequence are few but trade continues to expect increase this fall. Highway work is accounting for some formed bars and mesh.

San Francisco — Bids have been opened in the largest inquiry for reinforcing bars, 3817 tons, for the Grand Coulee dam, Washington and on 5300 tons by the United States engineer's office, Los Angeles, for the Hansen dam.

Seattle—Outlook is more promising and within a month local mills expect sizable orders. Meanwhile small tonnages are increasing although no large jobs are up for figures.

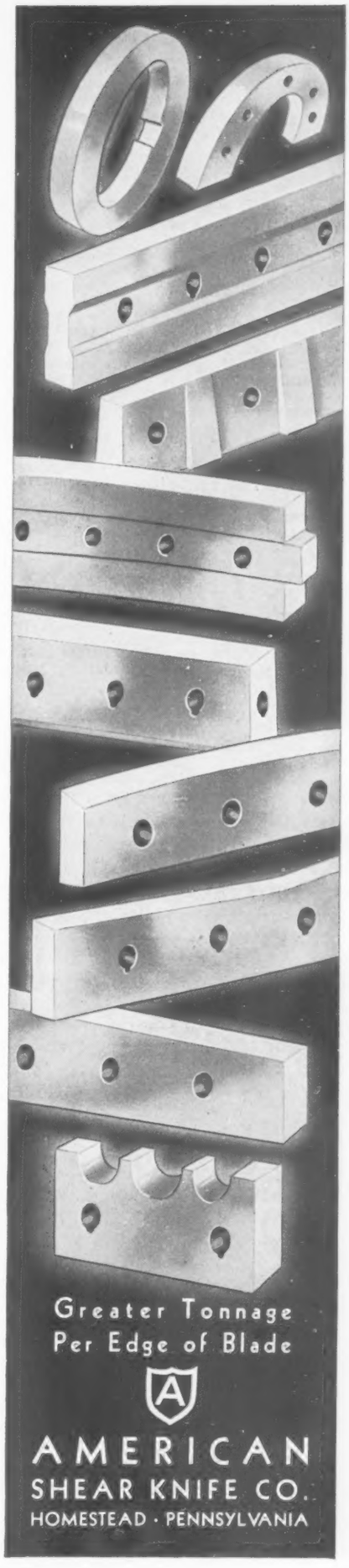
Reinforcing Steel Awards

1000 tons, Wappapello dam, St. Francis river, Wappapello, Mo., to Inland Steel Co., Chicago.
1000 tons, Cook county highway letting, to Inland Steel Co., Chicago.
850 tons, Parke-Davis Co. building, Detroit, to Truscon Steel Co., Youngstown, O.
800 tons, Red river bridge and approaches, Wilbarger county, Texas, to May & Loplaid Inc., Dallas, Tex.; Forcum-James Co., Dyersburg, Tenn., general contractor.
725 tons, bars and joists, state hospital, Newtown, Conn., to Sweet Steel Co., Williamsport, Pa.
600 tons, municipal stadium, Pawtucket, R. I., to Bethlehem Steel Co., Bethlehem, Pa.
500 tons, St. John's hospital, Springfield, Ill., to Missouri Rolling Mill, St. Louis.
425 tons, apartment building, Milwaukee, to Truscon Steel Co., Youngstown, O.
400 tons, three buildings, veterans' hospital, Camp Custer, Mich., to Pollak Steel Co., Cincinnati; James I. Barnes Construction Co., Logansport, Ind., general contractor.
400 tons, mesh parkway work, Bronx and Brooklyn, N. Y., two contracts, to Wheeling Steel Corp., Wheeling, W. Va., through Tuckahoe Construction Co., Tuckahoe, N. Y. and Cuzziano Construction Co., New York.
350 tons, J. L. Hudson store, Detroit, to Great Lakes Steel Corp., Detroit, through Taylor-Gaskin Inc., Detroit.
330 tons, procurement division, treasury

Concrete Bars Compared

	Tons
Week ending Aug. 13	**10,569**
Week ended Aug. 6	**9,416**
Week ended July 30	**6,753**
This week, 1937	**14,116**
Weekly average, year, 1937	**6,061**
Weekly average, 1938	**6,437**
Weekly average, July	**10,498**
Total to date, 1937	**201,799**
Total to date, 1938	**212,423**

Includes awards of 100 tons or more.



department, New York, to Ceco Steel Products Co., New York.
300 tons, marine corps base, San Diego, Calif., to unnamed interest.
280 tons, paving, Route 21, Lake county, Illinois, to Bethlehem Steel Co., Bethlehem, Pa.
275 tons, buildings 61 and 62, veterans' hospital, Bedford, Mass., to Northern Steel Co., Boston, through J. L. Robinson Construction Co., Baltimore, general contractor.
250 tons, schedule 3364, Panama Canal Zone, to Youngstown Sheet & Tube Co., Youngstown, O.
204 tons, crossing at Colfax, Placer county, California, to Soule Steel Co., San Francisco.
175 tons, administration building, Forest Lawn Co., Glendale, Calif., to Consolidated Steel Corp., Los Angeles.
160 tons, Union Pacific Railway warehouse, Portland, Oreg., to Bethlehem Steel Co., through Soule Steel Co., Portland.
150 tons, mostly mesh, highway, Post road, Westerly, R. I., to Wickwire-Spencer Steel Co., New York; Callan Construction Co., Bristol, R. I., general contractor.
150 tons, units 16, 18 and 20, Pacific Colony, Spadra, Calif., to unnamed interest.
139 tons, bridges and highway work in Contra Costa county, Calif., for state, to Gilmore Steel & Supply Co., San Francisco.
128 tons, contract MHT-28, Lincoln Tunnel approach, Weehawken, N. J., to Truscon Steel Co., Youngstown, O., through Joseph L. Sigretto Co., New York, contractor.
125 tons, post office, Kalamazoo, Mich., to West Virginia Rail Co., Huntington, W. Va.
125 tons, subway at Tilton, Wis., to Inland Steel Co., Chicago.
105 tons, building, Laurel Heights sanitarium, Connecticut, to Sweet Steel Co., Williamsport, Pa.
103 tons, Santa Ynez River bridge, Santa Barbara county, Calif., for state, to unnamed interest.
100 tons, Mendocino creek bridge, Mendocino county, Calif., for state, to Ceco Steel Products Co. San Francisco.
100 tons, bridge, Orleans parish, Louisiana, to Laclede Steel Co., St. Louis; Forcum-James Co., Dyersburg, Tenn., general contractor.
100 tons, administration building, Undercliff sanatorium, Meriden, Conn., to Bethlehem Steel Co., through Topper-Griggs, Hartford, Conn.
100 tons, Whittier elementary school, Pittsburgh, to Jones & Laughlin Steel Corp., through Dambach Inc., Pittsburgh.
100 tons, grain elevator, Fleischman Malting Co., Milwaukee, to Laclede Steel Co., St. Louis.

Reinforcing Steel Pending

3817 tons, bureau of reclamation, invitation A-38,122-A, Odair, Wash.; bids opened.
1700 tons, sewer, Williams avenue, Brooklyn, N. Y.
600 tons, subway section 9, route 110, Brooklyn, N. Y.; bids Aug. 23.
543 tons, water treatment plant, Muncie, Ind.; L. C. Love, Akron, O., low.
500 tons, jail and police station, San Diego, Calif.; general contract to M. H. Golden, San Diego.
438 tons, Mare Island navy yard, Calif.; bids opened.
370 tons, hospital for defective delinquents, Springfield, Mo.; bids in.
350 tons, government hospital, Murfeesboro, Tenn.; bids in.
345 tons, mesh, highway, Lewis county, New York; bids in.
327 tons, Heart Mt. canal, Shoshone project, Wyo.; bids Aug. 31.
310 tons, bridge and highway work in Mariposa county, Calif.; for state; bids Aug. 25.
278 tons, bureau of reclamation, Invitation B-42,101-A, Calexico, Calif.; Bethlehem Steel Co., Bethlehem, Pa., low.
230 tons, bureau of reclamation, Invitation A-38,123-A, Odair, Wash.; bids opened.
225 tons, dormitory, veterans' hospital, Bath, Me.; bids in.
220 tons, crossing at Pinole, Contra Costa county, Calif., for state; bids Aug. 24.
212 tons, mesh, highway, Oneida county, New York; Dale Engineering Co., Utica, New York, general contractor; bids July 26, Albany.
205 tons, bridge, New Haven, Conn.
185 tons, bureau of reclamation, Invitation B-42,108-A, Calexico, Calif.; bids opened.
179 tons, mesh, highway, Chenango county, New York; Davis & Stearns, Inc., Whitesboro, N. Y., general contractor; bids July 26, Albany.
175 ton, state office building, Nashville, Tenn.
150 tons, Henderson street sewer project, Seattle; bids in.
140 tons, sewer system, San Jose, Calif.; bids opened.
125 tons, bureau of reclamation, Invitation 27,593, Deer Creek, Utah; bids opened.
120 tons, protective wall, Louisville, Ky.; Pioneer Construction Co., Evansville, Ind., general contractors.
100 tons, heating distribution system, state college, Storrs, Conn.
100 tons, barracks, Carlisle, Pa.; bids Aug. 19.

Pig Iron

Pig Iron Prices, Page 78

Pittsburgh—Orders for pig iron are somewhat more numerous and there are more and larger inquiries in the market. July production showed a slight increase over June, and preliminary estimates show a further increase in August. Tonnage going into stock will undoubtedly be reduced further in August as shipments increase.

Cleveland — Shipments of pig iron are increasing steadily although the buying wave seems to have passed for the present. Foundry melt is heavier in all lines and those serving the automotive industry are feeling the effect of early orders for new models. Orders for immediate shipment are more frequent as melters find castings demand improving.

Chicago—Final figures for July show that pig iron shipments in general exceeded early estimates of improvement over June, which has been characterized by some producers as the low point of the year. One large interest reports shipments for July improved approximately 60 per cent over June, with continued improvement looked for in August shipments.

Boston — After a mild flurry following the price reduction in pig iron, buying has gradually slackened, current orders and shipments being for small lots to meet immediate requirements. While melt has improved in spots, the gains have not been large enough to stimulate consideration of advance needs or tend toward speculation. Prices are steady and firmly held and appear to be only a minor factor in current business.

New York—China is inquiring for several thousand tons of foundry and basic iron through brokers here. This inquiry follows the re-

cent purchase of 10,000 tons of foundry and basic iron from this country by Japan. Relatively small inquiries from the Scandanavian countries are still coming out, although purchases remain light.

Philadelphia—Shipments of pig iron are somewhat disappointing and considerable third quarter tonnage remains on sellers' books. Anticipated increase in foundry operations next month is expected to liquidate delayed orders rapidly. Buying is slow, even in cases where melters are not well covered. Talk of an early price advance has almost completely faded.

Buffalo—Republic Steel Corp. has started a blast furnace which has been down since June 1 as stocks are about exhausted. Republic also added an open hearth this week. Hanna Furnace Corp. suspended operations, due to an inventory surplus and furnace repairs.

Cincinnati—Inquiries for pig iron are more frequent, leading to hopes that the market is on the verge of expansion. Shipments this month have shown only slight improvement. The almost even level of foundry operations indicates that recent contracting was as protection against higher prices rather than a reflection of visible needs.

St. Louis — As expected at this time, purchasing of pig iron has dwindled to small proportions. Third quarter requirements are well covered, and current transactions consist of a few small lots for prompt shipment.

Birmingham, Ala. — July pig iron production increased over June and August will show an increase over July, due to accelerated buying which is not less than 25 per cent above the ordinary run. Little improvement is noted in shipments, but contract buying is maintaining a good pace. Nine stacks are in blast with another probable next month.

Toronto, Ont.—New business continues slow in the merchant pig iron market with current sales of 50 to 200 tons. Melters are interested in immediate needs only and awards are about 1200 tons weekly, with contract shipments bringing total deliveries to 2500 tons. Daily melt has been cut to about 60 per cent, while mills are maintaining an operating ratio of 80 to 90 per cent.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 77

New York—Bolt and nut production is at one of the two low points of the year, the other falling in March. Normally, this production follows within a few points the trend in steel output, but in recent weeks this has not proved the case. Output of bolts and nuts has sagged a few points, now being about 20 per cent.

Scrap

Scrap Prices, Page 80

Pittsburgh—The scrap market remains quiet with little interest at the moment. Quotation is still held at $15.25 to to $15.75 on No. 1 heavy melting steel on the basis of inactivity.

Sales from this district to outside consumers seem to point to a stronger market; however, there is as yet no confirmation through a sale into consumption locally. Outside tonnages have been selling for some time on a $16 basis with the dealer buying price at $15.50. However, lower freight rates to smaller mills in the immediate district has had a tendency to hold the price lower here.

Cleveland—While shipments of scrap continue to be made on contracts little new business is developing and melters seem to be waiting developments. Recent railroad lists covered small tonnages and brought top prices, some being withdrawn. Active buying is not expected for a fortnight or more.

Chicago—Recent sales have confirmed higher quotations for several scrap items. Angle bars are now quoted $16.50 to $17, low phos punchings $16.50 to $17, 2-foot rails $17.50 to $18 and turnings for electric furnace $13.50 to $14.

In spite of these increases, the market as a whole is not as strong as it has been. No. 1 heavy melting steel is still being quoted at $14 to $14.50, and brokers are paying $14 for tonnages.

Boston — On a comparatively light volume of business, iron and steel scrap prices continue to show strength, numerous grades being higher, notably No. 1 machinery, textile and breakable cast. Stove plate for nearby delivery is also stronger, $11, delivered being paid.

New York—The rise in iron and steel scrap prices, which has continued for several weeks, appears to have halted. While no grades have been marked down, brokers are refusing to better recent quotations and some indicate a mild recession in some directions is likely. This is based on reported lower bids on material for shipment to the Pittsburgh area. Meanwhile moderate shipments are being made to several eastern Pennsylvania mills at unchanged prices, heavy melting steel, stove plate and No. 2 cast being included. Brokers are paying $11.50

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STEVENS HOTEL CHICAGO

On Michigan Avenue
Overlooking Chicago's natural air-conditioner—Lake Michigan

for No. 1 heavy melting steel for export.

Philadelphia—A confused situation has developed in the eastern Pennsylvania scrap market. The recent sharp price advance has been abruptly checked by withdrawal of one leading consuming interest, which action may be followed by other mills. Some brokers also are less interested in covering and now are offering no more than $14 for No. 1 steel and $2.50 for No. 2. According to opinion in the trade leading mills are none too well supplied and the present lull may prove temporary. In the meantime steelmaking scrap is quoted 50 cents less in the consumer market. On the other hand, certain upward adjustments have been necessary because of buying of miscellaneous grades.

Buffalo—Although iron and steel scrap advanced 50 cents a ton at the start of the week, slightly easier undercurrents prevailed at the weekend.

No. 1 heavy melting steel was increased to a range of $14 to $14.50 a ton on the basis of a sale of railroad material to a local consumer at $15 a ton. Following this sale, however, an easier tone developed as some talk was heard that prices had advanced too rapidly.

Detroit — With the exception of a Fisher Body list, no scrap tonnages appeared last week; this week will see some offerings and they are expected to comprise larger tonnages as the first automobile scrap on 1939 programs makes its debut. The Fisher list was somewhat over the amount offered last month, and in view of the fact defective stampings and rejects are fairly high on early runs, a more plentiful supply of bundles is to be expected.

Cincinnati—Quotations on iron and steel scrap appear to have leveled off, still retaining strength from dealer activity, chiefly in No. 1 steel.

St. Louis — The market for iron and steel scrap continues to soar, prices on a number of important grades having been advanced to new highs.

Toronto, Ont.—Local dealers have revised buying prices on iron and steel scrap and new lists show declines of $1 to $5 per ton. The greatest slash was in materials for which there is little resale demand. Heavy melting steel was marked down $1 per ton in both the Toronto and Montreal markets and turnings have been cut $5 per ton to $3.50. No changes are shown in machinery cast, dealers cast and stove plate.

Warehouse

Warehouse Prices, Page 79

Pittsburgh—Warehouse tonnages are moving slowly with little business among local fabricators. There seems to be a great lack of interest among local steel buyers, most of whom are still on the hand-to-mouth basis and are inclined to discount probability of further changes in prices, especially upward.

Cleveland — Moderately larger demand for steel from store is being experienced, with the promise that August will exceed July tonnage. Orders have increased in number and total tonnage is slightly greater.

Chicago—Warehouse sales of steel have seen no change in the past week, according to district jobbers. Volume for the first ten days of August are reported on a par with the same period last month. This condition has been anticipated and lack of improvement so far this month does not dim previous prospects of increased business in the near future.

Boston—Steel warehouse volume the first half of August continues at about the July rate with total dollar value somewhat lower, reflecting revised prices placed in effect last month. Demand is well diversified with the number of orders sustained, but small individually.

Philadelphia—Orders coming to warehouses are slightly heavier than in July and prices are steadier following the reduction. Orders are fairly well diversified although tonnage continues slow.

Buffalo—While definitely stronger sentiment is apparent, warehouse distributors report the betterment has not yet been reflected appreciably in sales. Business is slightly better but a pronounced upswing is not looked for until late in the current month, when the improvement now shown in mill business spreads to warehouse lines. Prices are holding steady to firm.

Detroit—Warehouse sales during July and August have shown some improvement, but the outlook for fall is tempered with caution.

Cincinnati—Sales from warehouse show little variation from recent levels. Lowered prices have failed to stimulate buying and most ordering still shows reliance on prompt delivery. Projects dependent on governmental aid have not developed in volume.

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A chart of decimal equivalents will gladly be sent you upon request.

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Steel in Europe

Foreign Steel Prices, Page 79

London — (*By Radio*) — Blowing out of five blast furnaces in Great Britain indicates decreasing demand and output, due to lifeless markets. No improvement has taken place in the steel trade, lighter sections being particularly inactive. Foreign trade continues to contract with no favorable outlook before fall.

Steel and iron production in Great Britain continues to decline. In July total output of ingots and castings was 683,200 tons, a drop of 92,900 tons from the 776,100 tons made

in June. July pig iron production was 507,800 tons, compared with 541,500 tons in June.

Report from the Continent is that Italy will join the international wire syndicate. The Continental export situation is fairly satisfactory. South Africa is reported to be considering imposition of antidumping duties against United States imports.

More Ships Being Planned and Built

■ SHIPBUILDING activity has been accelerated, according to the American Bureau of Shipping, New York. On Aug. 1, 124 vessels, with total gross tonnage of 519,965, were being built to the bureau's classification. This compares wtih 119 vessels with gross tonnage of 476,560 as of July 1, and 101 vessels with total tonnage of 322,635 on Aug. 1, 1937.

Improvement in shipbuilding, according to J. Lewis Luckenbach, president of the bureau's board of managers, is due "to the fact that the program of United States maritime commission for rehabilitation of the merchant marine is emerging from the planning into actual construction of ships."

Plans of various types of ships, in addition to those already contracted for, have been prepared and in some cases tenders for construction have been taken.

"In spite of this activity, however, the building of ships is not yet proceeding at a rate sufficient to reduce appreciably the average age of the American merchant fleet," he stated.

"If all vessels under construction and under contract could be completed before the end of this year, the average age of the various groups of ships of 2000 gross tons and over would be little effected."

He added it would reduce the average age of passenger ships to 19.3 years, against 19.7 as of July 1; cargo ships (including bulk carriers) to 19.2, against 19.8; and tankers to 15.9, against 17.

On the Great Lakes, as of June 30 there were under construction and under contract two vessels of 2000 gross tons and over; one is a bulk carrier and the other a tanker. Average age of the Great Lakes fleet at present is as follows: Passenger bots, 29.1 years; cargo boats, 35.4; bulk carriers, 29.3; and tankers (of which there are nine), 15.5.

Britain To Send Several Hundred to U. S. Meeting

(*Concluded from Page* 16)

Chicago, arriving on Oct. 20 and remaining through Oct. 25.

In Chicago, the visitors will be tendered a banquet at the Palmer House evening of Oct. 20, as guests of the local committee.

Plants to be visited in the Chicago area include: Republic Steel Corp., Stewart Die Casting Co., Crane Co., Tractor works of International Harvester Co., and Hawthorne works of Western Electric Co., in Chicago; Columbia Tool Steel Co. and American Manganese Steel Co., Chicago Heights, Ill.; Carnegie-Illinois Steel Corp., Gary, Ind.; Fansteel Metallurgical Corp., North Chicago, Ill.; Acme Steel Co., Riverdale, Ill.; Inland Steel Co. and Youngstown Sheet & Tube Co., Indiana Harbor, Ind.; Federated Metals Corp., Whiting, Ind.; and International Lead Co., East Chicago, Ind.

Oct. 24, some of the group will go to Milwaukee to visit A. O. Smith Corp. and Milcor Steel Co. The entire party will depart from Chicago on Oct. 25, returning to New York for sailing Oct. 26.

Tour Through Canada

The contingent visiting Canada will arrive in Quebec Sept. 22 and attend a dinner that evening at Chateau Frontenac. Various units of Shawinigan Chemicals Ltd., Trois Rivieres, will be inspected the following day, and the party will go to Montreal, arriving Sept. 24. Here visits will be made to Canadian Copper Refiners Ltd., Canadian Wire & Cable Co. Ltd., Canadian Metal Co. Ltd., Canadian Steel Foundries Ltd., Canadian Vickers Ltd., and St. Lawrence Alloys Ltd. A dinner will be served at the Mount Royal hotel that evening with the Canadian Institute of Mining and Metallurgy as host.

Sept. 25 the visitors will go to Ottawa and on the following day inspect the Royal mint, and laboratories of the National Research council and bureau of mines. The local branch of the Canadian Institute of Mining and Metallurgy will entertain at dinner in the evening at Chateau Laurier. At this point, the party will divide, one section proceeding to Toronto on Sept. 27; the other going to Sudbury and arriving in Toronto, Sept. 28.

Those visiting Sudbury will inspect the smelting works and Frood mine of International Nickel Co. of Canada Ltd., mine and mill of Falconbridge Nickel Co. Ltd., and Ontario Refinery Co. Ltd. Local branch of the Canadian Institute of Mining and Metallurgy will entertain at dinner in the evening at the Nickel Range hotel.

In Toronto, both groups will visit Anaconda American Brass Ltd., Canadian Wire & Cable Co. Ltd., De Haviland Aircraft of Canada Ltd., and John Inglis Co. Ltd. Sept. 29 the itinerary is to Niagara Falls, Ont., via Hamilton, where stops will be made at the Steel Co. of Canada Ltd., Dominion Foundries & Steel Ltd., International Harvester Co. Ltd. and Canadian Westinghouse Ltd.

On Sept. 30, some of the visitors will go to Niagara Falls, N. Y., and Buffalo to inspect plants already mentioned in the American itinerary. Others will travel to Port Colborne and Welland, there stopping at International Nickel Co. of Canada Ltd. and Atlas Steel Ltd. The trip from Niagara Falls to New York is scheduled for Oct. 1.

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East Pittsburgh Pennsylvania

Nonferrous Metals

New York — A sharp reaction in the foreign copper market on Friday featured an otherwise quiet week in nonferrous metals. All primary metal markets in this country held unchanged with the exception of tin which eased fractionally.

Copper — The decline in export copper to 10.05c brought the market below the domestic level for the first time in weeks. Easiness was attributed to nervousness created by uncertainty over likely weekend developments in Europe, especially those concerning Germany and the Russo-Japanese situation. The decline was stimulated also by weakness in Wall street. World blister and refined copper stocks declined 40,006 tons in July with those of refined metal alone totaling 523,196 tons. The statistical showing was the best since the deterioration of the industry's position set in last year. Demand in the domestic market tapered further although prices held at 10.12½c, Connecticut.

Lead — Buying remained slow with weakness in Wall street late in the week discouraging whatever buying incentive there might have been. Prices held at 4.90c, New York, and 4.75c, East St. Louis.

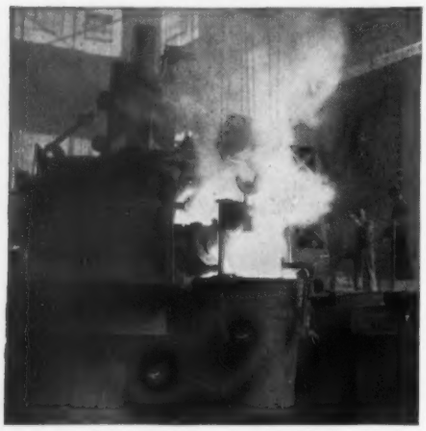
Zinc — Carlot buying in zinc was well spread with the total turnover for the week estimated up to 5000 tons. Orders for shipment earlier than originally specified were received in some directions. Prime western held at 4.75c, East St. Louis.

Tin — Both consumers and sellers remained reserved as reflected in the light daily sales. Price fluctuations were narrow with the trend slightly downward. Straits spot closed at 43.00c.

Antimony — Buying was confined to small lots, although Japan was reported to have bought about 50 tons of antimony of Mexican origin in this market.

BASIC ELECTRIC STEEL

FORGINGS



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BASIC ELECTRIC STEEL

Carbon, Alloy, Corrosion Resistant and Special Steels Smooth Forged, Hollow Bored, Rough or Finished Machined, Heat Treated to Specifications ...Forging Quality Ingots, Pressed or Hammered Billets.

Die Blocks & Piston Rods

NATIONAL FORGE AND ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PENNA.

Equipment

New York—For three months machine tool orders with most dealers and builders have increased slightly indicating the bottom has been reached in the decline. Inquiries continue to mount moderately. There is considerable buying for government shops, but prospective volume from such sources is substantially higher than yet placed. Scattered reports of increased production by metal fabricating shops in various sections is also encouraging. The airplane industry is buying steadily, one or two tools at a time, without placing large orders. Generally speaking, machine building plants without foreign orders

Nonferrous Metal Prices

Spot unless otherwise specified. Cents per pound

Aug.	Copper Electro, del. Conn.	Copper Lake, del. Midwest	Copper Casting, refinery	Straits Tin, New York Spot	Straits Tin, New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony Amer. Spot. N.Y.	Nickel Cathodes
6	10.12½	10.25	9.65	43.75	44.05	4.90	4.75	4.75	20.00	10.75	35.00
8	10.12½	10.25	9.65	43.45	43.75	4.90	4.75	4.75	20.00	10.75	35.00
9	10.12½	10.25	9.65	43.25	43.55	4.90	4.75	4.75	20.00	10.75	35.00
10	10.12½	10.25	9.65	43.25	43.55	4.90	4.75	4.75	20.00	10.75	35.00
11	10.12½	10.25	9.65	43.30	43.65	4.90	4.75	4.75	20.00	10.75	35.00
12	10.12½	10.25	9.65	43.00	43.30	4.90	4.75	4.75	20.00	10.75	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 10.12½c Conn. copper

Sheets

Yellow brass (high) 16.75
Copper, hot rolled 18.25
Lead, cut to jobbers 8.00
Zinc, 100 lb. base 9.75

Tubes

High, yellow brass 19.50
Seamless copper 18.75

Rods

High yellow brass 12.75
Copper, hot rolled 14.75

Anodes

Copper, untrimmed 15.50

Wire

Yellow brass (high) 17.00

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

*New York 6.00-6.25
*Cleveland 7.25-7.50
*Chicago 6.25-6.50
*St. Louis 5.75-6.00

Heavy Copper and Wire

*New York, No. 1.....7.75-8.00
*Cleveland, No. 1.....7.75-8.00
*Chicago, No. 1.....7.75-8.00
*St. Louis 7.50-7.75

Composition Brass Borings

*New York 5.40-5.75

Light Copper

New York 6.22½-6.50
*Cleveland 6.50-6.75
*Chicago 6.25-6.50
*St. Louis 5.75-6.00

Light Brass

*Cleveland 3.75-4.00
*Chicago 4.25-4.50
*St. Louis 4.00-4.25

Lead

New York 4.00-4.25
Cleveland 3.75-4.00
*Chicago 4.00-4.25
St. Louis 3.50-3.75

Zinc

New York 2.50-2.62½
Cleveland 2.25-2.50
*St. Louis 2.50-2.75

Aluminum

*Borings, Cleveland 6.25-6.50
*Mixed, cast, Cleveland 8.75-9.00
Clips, soft, Cleveland.....12.25-12.50
*Mixed, cast, St. Louis.....7.75-8.00

SECONDARY METALS

Brass ingot, 85-5-5-5, less carloads 10.75
*Standard No. 12 aluminum...13.75-14.25

are not active and some are down for midsummer vacations for a longer period than usual. Also current orders for the more standard or small tools are being shipped promptly from stock.

Cleveland—Light improvement in machine tool and equipment inquries and orders continues. Especially noticeable is the pickup in automotive orders, although improvement is spread over a wide range of industries. Inquiries indicate fall business will continue a moderate upward trend.

Manning, Maxwell & Moore Inc., Shaw-Box Crane & Hoist division, Muskegon, Mich., on the basis of a bid of $69,480, has been awarded the contract for a 275-ton overhead traveling crane, Chickamauga powerhouse.

Boston — Foreign orders continue to sustain machine tool operations in New England. Those without such business on books are doing little. One producer of grinders reports the ratio of foreign orders to domestic purchases last month was five to one while in June it was three to one. Japan has been the heaviest buyer recently with a substantial volume also taken for Russia. The latter will issue another large list shortly. New England shops have also shared liberally in large purchases by the Paterson, N. J., airplane engine builder and a heavy list remains active to be closed shortly. Outside this industry, however, domestic orders are generally for one or two tools at a time from diversified industrial purchasers. Included has been some volume from the precision bearing industry, which has held up surprisingly well on commercial and industrial work, the automobile industry excepted.

Seattle—Interest is focused on bids for heavy equipment for the Coulee and Bonneville projects. Bids were opened at Denver Aug. 13, Spec. 787, for furnishing three 108,000-kva. generators. Same department has issued a call for Sept. 7, Spec. 788, for furnishing Coulee power house with two turbines of 14,000-horsepower hydraulic units, with exciters, governors and other accessories. United States engineer, Bonneville, will receive bids Sept. 13 for two turbines, 74,000 horsepower each. Puget Sound navy yard opened bids Aug. 12 for 550-kva. transformer, conduits, switches and other equipment, Aug. 10 for trucks, miscellaneous steel and air reducing valves, also 38,000 feet of wire and cable and electrical supplies. Seattle opened tenders Aug. 10 for furnishing 175 steel street car wheels. Olaf L. Olsen, director, will open bids at Olympia, Wash., Aug. 18 for furnishing pumps, piping and other equipment for the Washington state custodial school at Buckley, Wash.

Construction and Enterprise

Ohio

BLUFFTON, O.—Village, E. S. Hauenstein, clerk, plans power plant improvements costing $42,625. Carl J. Simon and Associates, Evans-Central building, Van Wert, O., consulting engineers.

DAYTON, O. — War department, air corps, materiel division, office of contracting officer, Wright field, will take bids until 10 a.m., Aug. 23, for one 110-volt, 60-cycle, 3-phase tube and fitting vibrating machine, delivered Wright field; and will take bids until 10 a.m., Aug. 17, on 22 six-inch and 20 eight-inch 110-volt, universal current, portable electric saws.

MANSFIELD, O. — Tracy C. Styert, service director, has been authorized to purchase one air compressor, cost of which is not to exceed $2000.

MARIETTA, O.—City, P. W. Griffiths, mayor, is completing plans for new water plant, including installation of softening, purifying and stabilizing equipment, etc. Total cost estimated at $324,716, of which PWA has approved $146,122. Bids will be taken about Sept. 20.

SWANTON, O. — Village, H. D. Allen, clerk, plans electric generating system, for which PWA application of $86,625 has been filed. Ayres, Lewis, Norris & May, Ann Arbor, Mich., are consulting engineers.

TROY, O.—City, George L. Smith, service director, is contemplating erection of municipal light plant, total cost of which is estimated at $175,720.

Michigan

DETROIT — Van Ranst Mfg. Co. has been incorporated to deal in mechanical devices, by C. W. Van Ranst, 10226 Woodward avenue.

DETROIT—O. & S. Bearing Co., 303 South Livernois street, has purchased about 16 acres near Clinton, Mich., for new plant, including power house. Cost exceeds $90,000 with equipment.

MARSHALL, MICH. — Max Stulberg, head of Marshall Iron & Metal Co., will erect a new factory building to replace one destroyed by fire last December.

MT. PLEASANT, MICH. — PWA has approved grant for construction of municipal electric plant here, estimated to cost $484,500. Ayres, Lewis, Norris & May, Ann Arbor, Mich., consulting engineers.

NORTHVILLE, MICH.—Michigan Wood Products Co., Plymouth road, plans installation of power equipment in connection with proposed rebuilding of wood specialty manufacturing plant recently destroyed by fire.

SPARTA, MICH. — Sparta Foundry Co. will erect a one-story addition to its plant. Weemhoff & Steketee, Grand Rapids, Mich., are architects.

YPSILANTI, MICH. — R. S. Gerganoff, architect, Ypsilanti, is preparing plans for complete fire rebuild of factory of the Central Specialty Co. Estimated cost $40,000. (Noted July 25).

Connecticut

ANSONIA, CONN.—Farrell-Birmingham Co., Main street, has let contract to Max A. Durrschmidt Inc., 100 Main street, Derby, Conn., for two-story, 45 x 100-foot, steel factory.

HARTFORD, CONN.—Hartford Special Machinery Co., 287 Homestead avenue, plans second story addition to present unit. Cost about $40,000 with machinery. General contract has been let to R. G. Bent Co., 93 Edward street.

Pennsylvania

HARRISBURG, PA. — Old Fort Mills Inc. is starting construction on a new plant here to take care of expanding business. The principal building will be 80 x 240 feet, and will be equipped with modern feed manufacturing machinery, including percentage feeders, aspirators and bulk unloading devices.

PHILADELPHIA—Bureau of yards and docks, navy department, Washington, plans installation of motors and controls, regulators, electric hoists, con-

TUBE MILL EQUIPMENT OF MODERN DESIGN

Let us know your problems and we will be glad to be of service to you.

42 years experience in building tube mills.

TAYLOR-WILSON MANUFACTURING CO.
MAIN OFFICE and WORKS
500 Thomson Ave.
McKEES ROCKS, PA.

veyors and other equipment in new addition to machine shop at navy yard here. Appropriation of $625,000 has been authorized. Bids will be asked soon.

PITTSBURGH—West Penn Power Co. has authorized appropriation of about $4,500,000 for expansion and improvements in plants and system. Considerable portion of fund to be used for extensions in transmission and distributing lines, substations and other operating facilities.

Massachusetts

SPRINGFIELD, MASS.—Gilbert & Barker Mfg. Co., maker of oil burning equipment, and air conditioning apparatus, has leased building on Jefferson avenue and Liberty street, Toronto, Ont., and will modernize for occupancy by its Canadian subsidiary.

New York

JAMESTOWN, N. Y. — Jamestown Metal Equipment Co. Inc., manufacturer of automobile radiators and metal products, 1088-1132 Allen street, has let contract for construction of second unit of expansion program.

New Jersey

HOBOKEN, N. J.—Eisen Bros. Parlor Frame Co. Inc., Willow avenue and Sixteenth street, plans installation of electric power equipment in two-story addition to furniture factory, 50 x 300 feet. Cost $70,000 with machinery.

TRENTON, N. J.—Joseph Stokes Rubber Co., Taylor avenue, has filed plans for new steam power house at rubber mill and will proceed with work at once. Cost $30,000 with boiler units and auxiliary equipment.

Illinois

CHICAGO—Pressler Welding & Boiler Co. has been organized. Correspondent: Hugh J. Dailey, 140 South Dearborn street.

CHICAGO—G. S. Rogers & Co., 228 North LaSalle street, has been organized to manufacture and distribute process materials used in the metalworking industries, including carburizers, heat treating and drawing salts, core oils and metal cleaners.

Indiana

TERRE HAUTE, IND.—Bureau of prisons, department of justice, Washington, plans power plant at new federal prison near here. Also will build pump station and other utilities. Project to cost $3,000,000, for which appropriation has been authorized. Bids will be asked soon.

Alabama

BIRMINGHAM, ALA.—Italian-American Mfg. Co. has been incorporated with $50,000 capital, Dominick Simonetti, president, 1601 Bush boulevard, to establish a $100,000 macaroni plant. The firm has leased a building at 2101 Morris avenue and will install modern machinery.

Maryland

BELTSVILLE, MD.—Bureau of chemistry and soils, department of agriculture, Washington, plans installation of motors and controls, conveyors, regulators and other equipment in new laboratory building for fertilizer investigations here. Fund of $650,000 has been authorized. Work to begin soon.

Kentucky

CATLETTSBURG, KY. — Ashland Refining Co., Ashland, Ky., contemplates expanding its oil cracking plant near here. Cost $750,000.

Florida

ARCADIA, FLA. — City, Paul Speer, city recorder, is considering erection of $150,000 electric plant; PWA will make grant of 45 per cent.

CLEARWATER, FLA. — City, L. A. Marsh, mayor, plans $397,000 power plant and $233,000 distribution system.

Mississippi

NATCHEZ, MISS.—Mississippi Power & Light Co., Jackson, Miss., plans early construction of steel tower transmission line from connection with present system to point near here for power service for new mill of Armstrong Rubber Co., West Haven, Conn., New mill will be used for automobile tire and tube manufacture, with installations to include heavy-duty motors and controls, regulators, conveyors and other equipment. Expenditure will total about $1,000,000.

Louisiana

RAYNE, LA. — PWA has approved grant of $38 215 for enlargement of water and light plant and installation of new equipment. Total cost $84,923.

Missouri

INDEPENDENCE, MO. — City has PWA grant of $7650 for constructing an addition to steam generating plant. Estimated cost $17,000.

VANDALIA, MO. — City plans construction of diesel electric light and power plant and distribution system, estimated to cost $172,000. PWA grant of $77,000 has been approved.

Arkansas

FAYETTEVILLE, ARK. — Fayetteville Royal Crown Bottling Co., L. T. Purnell, has leased building on East street and will remodel for bottling plant. Machinery costing $15,000 will be installed.

Oklahoma

CHEROKEE, OKLA. — PWA has approved grant of $58,500 for installing 850-horsepower diesel generator and cooling system in power plant. Total cost $132,000.

Minnesota

BLUE EARTH, MINN. — PWA has approved grant to city, Walter Enger, city clerk, for constructing sewage disposal plant to cost $175,200. Burlingame, Hitchcock & Estabrook, 521 Sexton building, Minneapolis, consulting engineers. (Noted July 11).

BRAHAM, MINN. — REA has allotted $272,000 additional funds to the Pick Cooperative Electric association, Beauford Johnson, superintendent, for the construction of 259 miles of rural transmission lines.

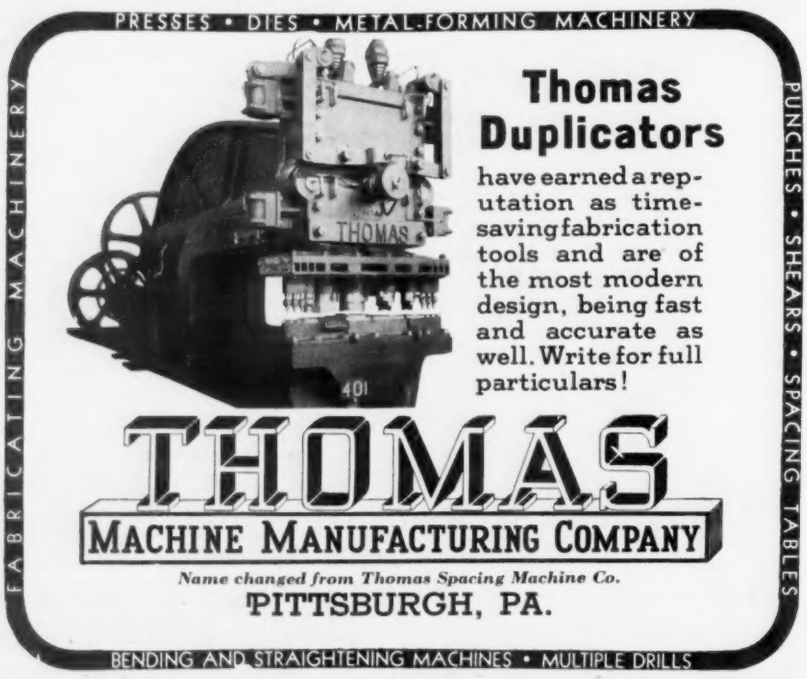
HECTOR, MINN. — REA has allotted $200,000 to the Renville-Sibley Cooperative Power association, Ewald Schmechel, president, for construction of 174 miles of rural transmission lines.

HIBBING, MINN. — PWA has approved grant to village, J. H. Raugh, village engineer, for constructing sewage disposal plant, including plant for secondary treatment, intercepting sewers and incinerator, to cost $363,000. (Noted July 11).

JANESVILLE, MINN.—Village, George Schmidt, recorder, is taking bids to Aug. 29, 10 a.m., on construction of municipal light, heat and power plant. Plans are obtainable from village recorder or G. M. Orr & Co., 542 Baker Arcade building, Minneapolis, consulting engineer. Fund available for work is $125,000. (Noted June 20).

LE CENTER, MINN. — City has filed application with PWA for grant to construct light and power plant and repairs to pump house to cost $132,000. G. M. Orr & Co., Baker Arcade building, Minneapolis, consulting engineer.

MADISON, MINN. — City, James H. Hayden, clerk, has filed application with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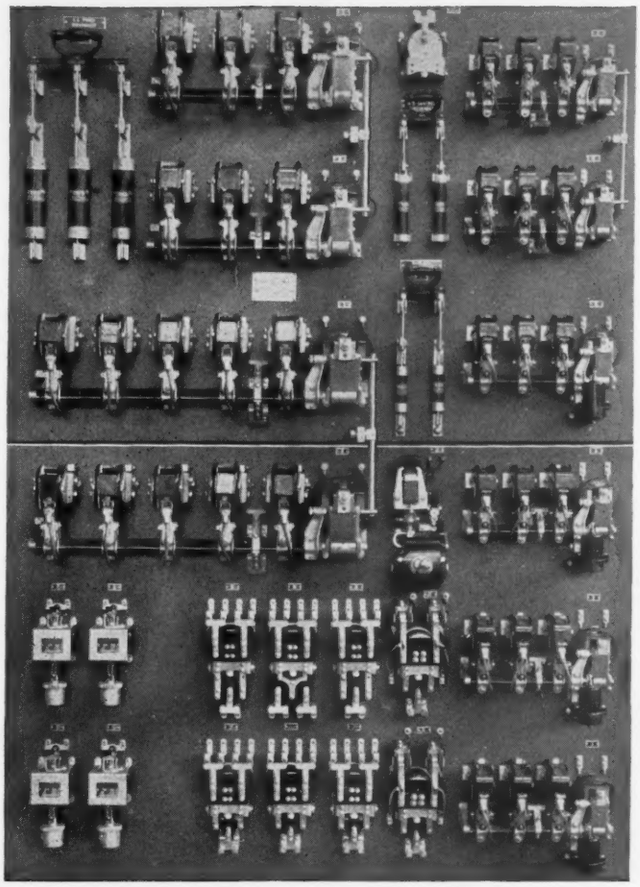

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Two "3C" 14" Brakes stop it instantly and smoothly, for with the Clark principle, Braking Area is 90% of the wheel surface, and equal retarding torque in each direction is obtained.

"3C" Brakes, Crane Controllers, and Heavy Duty Mill Auxiliary Controllers are important factors in all phases of steel production, and in non-ferrous production, too.

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Roll Lathes, Sheet and Tin Mill Shears of all kinds; Steam Doublers; Stretcher Levelers and Rolling Mill Machinery built to specification. We shall be glad to figure on your requirements.

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TORRINGTON · · · CONNECTICUT

PWA for funds to improve its power plant, including additional equipment, generator, and water softener with 280,000-gallon daily capacity, Perkins & McWayne, Sioux Falls, S. Dak., consulting engineers.

ROSEAU, MINN. — PWA has approved grant to village, J. O. Juvrud, president of council, for constructing sewage disposal plant costing $67,800. Lium & Burdick, YMCA building, Grand Forks, N. Dak., consulting engineers. (Noted July 11).

WINTHROP, MINN. — PWA has approved grant to city, George Schemon, city clerk, for construction of heating system, including building, distribution system, coal handling equipment, two new boilers equipped with stokers, and vacuum pumps, to cost $108,386. Rose & Harris, 416 Essex building, Minneapolis, consulting engineers. (Noted June 6).

OUR AIM is to render service. A little more complete . . . more hospitable...more pleasing . . . than even the most exacting guest expects.

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Texas

PILOT POINT, TEX.—City, G. B. Moffitt, city secretary, plans $27,000 waterworks improvements, including deep well, pumping machinery.

Kansas

KANSAS CITY, KANS.—Sealy Mattress Co., Woodwether road and Santa Fe street, maker of bed springs, has awarded general contract for one-story addition, 67 x 125 feet, for expansion in spring division and improvements in present plant. Cost over $50,000 with equipment.

OTTAWA, KANS.—Plans are maturing for extensions and improvements in municipal electric power plant, including installation of 4000-kilowatt turbogenerator unit and accessories, two new boilers and miscellaneous equipment. Cost $450,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers.

WELLINGTON, KANS. — PWA has allotted $91,800 to city, E. E. Glamarn, mayor, for improvements to its power plant and waterworks. Estimated cost $201,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers.

North Dakota

BISMARCK, N. DAK. — PWA has approved grant to city, Myron H. Atkinson, city auditor, for constructing waterworks plant costing $62,000. Lium & Burdick, Grand Forks, N. Dak., consulting engineers.

GLENFIELD, N. DAK. — REA has allotted $30,000 to the Tri-County Electric Cooperative Inc., C. F. Bohner, president, for erection of generating plant.

Nebraska

LINCOLN, NEBR. — REA has allotted $575,000 to Eastern Nebraska Public Power district, George W. Kline, secretary, for erecting rural transmission lines. H. H. Henningsen Engineering Co., 326 Union State Bank building, Omaha, Nebr., consulting engineer.

Iowa

ESTHERVILLE, IOWA — PWA has approved grant to city, F. J. Ehlers, mayor, for improvements to waterworks, comprising pump station, treatment plant and additional equipment costing $53,120. H. R. Green Engineering Co., Cedar Rapids, Iowa, consulting engineer. (Noted July 4).

HARCOURT, IOWA — PWA has approved grant to city, Carl Matenborg, mayor, for waterworks system, including pump house and equipment, tank, tower and distribution system. R. W. Gearhart, Cedar Rapids, Iowa, consulting engineer.

MELBOURNE, IOWA — PWA has approved grant to city, Frank Becker, mayor, for complete waterworks system, costing $35,000. H. R. Green Engineering Co., Cedar Rapids, Iowa, engineer.

REMSEN, IOWA — PWA has approved grant to city for remodeling and constructing an addition to its power plant, including diesel-driven electric generator to cost $56,000. Buell & Winter Engineering Co., Insurance Exchange building, Sioux City, Iowa, consulting engineer. (Noted July 4).

ROCKWELL CITY, IOWA — REA has allotted $220,000 to the Calhoun County Rural Electric Cooperative, A. J. Cook, president, for constructing 195 miles of rural transmission lines. Young & Stanley Inc., Muscatine, Iowa, consulting engineers.

WEBB, IOWA — PWA has approved grant to village, V. L. Sage, clerk, for waterworks, including well supply, pump house and equipment, elevated tank and distribution system to cost $17,000. Currie Engineering Co., Webster City, Iowa, consulting engineer.

WILTON JUNCTION, IOWA—Village, F. H. Miller, clerk, is taking bids to Aug. 22, 10 a.m., on improvement of its electric light plant, including installation of a 300-horsepower diesel engine as per plans obtainable from clerk.

Colorado

DENVER—Bureau of reclamation has appropriation of $1,000,000 for Elephant Butte hydroelectric generating plant, Rio Grande project.

Montana

LEWISTOWN, MONT. — REA has allotted $88,000 to the Fergus County Electric Cooperative, Julius Tresch, president, for constructing 80 miles of rural transmission lines.

Pacific Coast

BURBANK, CALIF. — A certificate to conduct business under the firm name of Austin Craft, a machine and model shop, in the aircraft factory district at 431 East Victory boulevard, Burbank, has been issued to Walter S. Austin, 349 Victory court.

EL SEGUNDO, CALIF.—City plans purchase of four horizontal centrifugal pumps with motors.

LOS ANGELES — Building permit has been issued for construction of a factory at 1209 Nadeau street, here, for Acme Blower Pipe Co. The new structure will be 44 x 90 feet.

LOS ANGELES — Marshall S. Setnan has filed articles of incorporation for the Setnan Aircraft Inc., capitalized at $200,000, to manufacture airplanes and airplane parts in Los Angeles.

LOS ANGELES — Philip Vandernoot, 5168 Edgewood place, Los Angeles, has been granted certificate to conduct business under the firm name of Davis Precision Machine Shop, at 1018 South Sycamore avenue, Los Angeles.

LOS ANGELES—Miller Malting Co., Hollywood Guaranty building, will install power equipment in new malt products plant. Cost close to $170,000. Edward Wilkes, Mutual building, Kansas City, Mo., architect and engineer.

PASADENA, CALIF. — A certificate to conduct an ornamental iron business under the name of Lee & Tallman, at 1465 East Walnut street, Pasadena, has been issued to Otto and Mary Lee, 2637 Roseview avenue, Los Angeles.

PORTLAND, OREG.—Pacific Cooperage Co. recently sustained severe damages by fire to its plant.

SPOKANE, WASH.—Beryl Metals Co., 515 Rebecca street, plans to double its plant by addition of a $20,000 structure to house electric smelter and other equipment.

VANCOUVER, WASH.—Star Brewing Co. Inc., plans rebuilding part of brewery recently destroyed by fire.

Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

Cost Not Justified

To the Editor:

Buffalo shipping interests are heartily opposed to a vast expenditure of mony for improvement of the St. Lawrence river to allow ocean freighters free access to the Great Lakes. And, according to reports received here, the Lake Carriers' association, which represents the tonnage of approximately 350 freighters, is likewise opposed to such an improvement.

Quoting a prominent Buffalo shipper and operator:

"Our opposition is based primarily on the fact that about nine-tenths of the tonnage which annually moves on the lake does not require an outlet to the sea. The biggest item is ore, shipments of which have varied through the years from a low of 3,000,000 tons in depression months to a high of 65,000,000 tons in 1929. This commodity moves from the head of Lake Superior and Lake Michigan to Lake Erie ports, principally to such steel centers as Cleveland, Buffalo, Conneaut, Ashtabula and other Ohio ports.

"Coal, which annually averages 35,000,000 to 40,000,000 tons, is principally a westbound movement, originating in Pennsylvania, Ohio and West Virginia and moving to the head of the lakes. There is no call for an outlet to the sea for coal.

"Stone generally moves along the same lines as ore, the tonnage usually depending on the demand for ore.

"As far as grain is concerned, the United States has practically ceased to be an exporting country, until recent months. Even now, grain can be carried from Lake Superior to Montreal or New York for 5 cents. This rate dispels assertions that a saving of 10 cents can be realized through a direct outlet to the sea.

"In view of the nature of the tonnage moving on the Great Lakes, such a vast expenditure as is contemplated for improvement of the St. Lawrence and its continued maintenance is entirely unwarranted. The limited amount of tonnage which would move from lake ports to the sea in ocean freighters, principally package freight, is not comparable to the necessary expenditures for such an outlet and inlet."

FRANCIS J. O'CONNELL
Marine Editor,
Courier-Express,
Buffalo

"By Sweat of Their Brows"

To the Editor:

For the past two years I have been unable to keep up with my former careful reading of editorials and other trade paper items, but now and then catch a chance, and am prompted to write you by what was said in your editorial of Aug. 8, page 33, under the title "More Jobs Can Be Created—If."

It occurs to me that the whole tenor of editorials on such subjects now ought to be based on a new slogan. We should adopt the motto and hang it up in all business offices; put it on the license plates of all our cars, and keep constantly reminding ourselves and others. It ought to be the exact reverse of the principle which has been controlling in all of the vote buying of the past five or six years. The new motto ought to be:

"WORK OR STARVE"

If you will remember the story of Adam and Eve—and if you don't remember, if you will look up the volume in which that story appears, you will find that after Eve fed Adam the core of the apple, they were both thrown out of the Garden of Eden and were thereafter condemned to work. They were advised that from there on they must work or starve.

All of us who are working nowadays are loaded down with a double burden because of the loafers who want to eat without working.

If you will play into this subject, making it blunt, cold, brief, and with plenty of repetition, over the next few months, maybe it will do some good.

VICE PRESIDENT,
Pennsylvania Manufacturing Company

"Safety" a Mental Attribute

To the Editor:

People who think industry is careless of its workers have not followed progress in safety work over the past quarter of a century and the amazing progress made in the steel industry to protect life and limb. (STEEL, Aug. 15, p. 36.)

Back in 1914 the beginnings of the great movement had just started. In Chicago a small office close to those of the Illinois Steel Co. was occupied by the Council for Industrial Safety, headed by W. H. Cameron, who has been the motive power ever since, except for a brief interval when he was in another connection.

The missionary work started in this small way has spread into every branch of industry and has saved countless lives and prevented many mutilations. While much stress has been laid on mechanical aids to remove hazards the discovery has been made that safety, to a large degree, rests in the mind of the worker himself and the psychology of "thinking safety" has been preached incessantly to workers.

Another discovery has been made, that safety pays in dollars, both to the employe and the employer and that the cost is returned many fold. Statistics of the change wrought by the intensive work to promote safety tell an eloquent story. The National Safety council, which grew out of the original organization, has earned a high place in welfare work.

PLANT MANAGER
Chicago

For Cleaner Steel, Make a Final Addition of Calcium-Manganese-Silicon

Recent developments in the use of alloy steels and irons in industry will be featured in the exhibits of Electromet products at the National Metal Exposition, Detroit, Michigan, October 17-21, 1938. Plan now to visit Area B-215.

CALCIUM-MANGANESE-SILICON will help to remove slag inclusions like those shown in this photomicrograph. The picture is a section of steel enlarged 500 times.

Calcium-manganese-silicon, used as a final alloy addition to steel, produces a cleaner coarse-grained steel with deep-hardening properties. Long commercial use of this combination alloy has proved its merits for this purpose.

Calcium-manganese-silicon combines three powerful deoxidizing elements in one alloy. It is more effective as a deoxidizer and scavenger of steel than separate alloys containing these elements.

Calcium-manganese-silicon is also being successfully used to deoxidize all types of stainless steel, high-speed tool steels, and special steels subject to transverse testing.

You are invited to ask that an Electromet metallurgist call and explain more fully how calcium-manganese-silicon will help you obtain cleaner steel.

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MANGANESE
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Low-Carbon Ferromanganese
Medium-Carbon Ferromanganese
Spiegeleisen
Manganese Metal
Manganese-Copper
Miscellaneous Manganese Alloys

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Silicon Metal
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